The MINING CONGRESS JOURNAL

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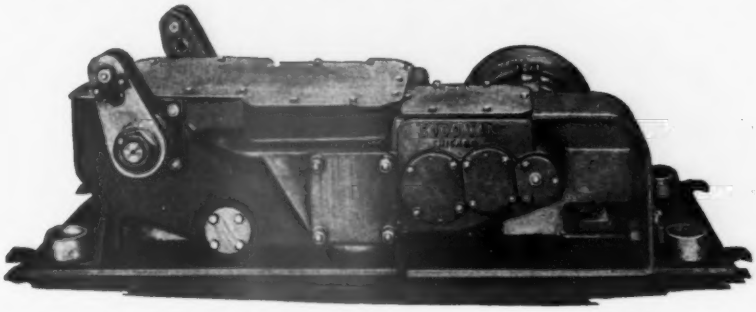

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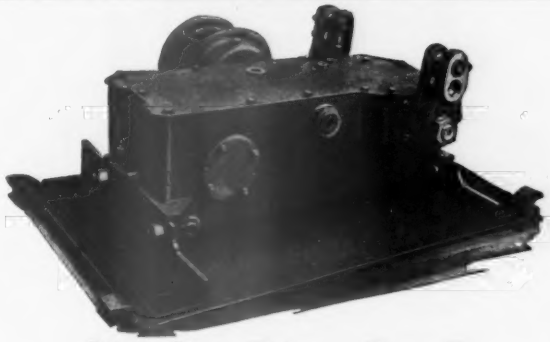

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E. R. COOMBES
Editor

G. B. SOUTHWARD
Associate Editor

FRANK W. MORAN
Field Representative

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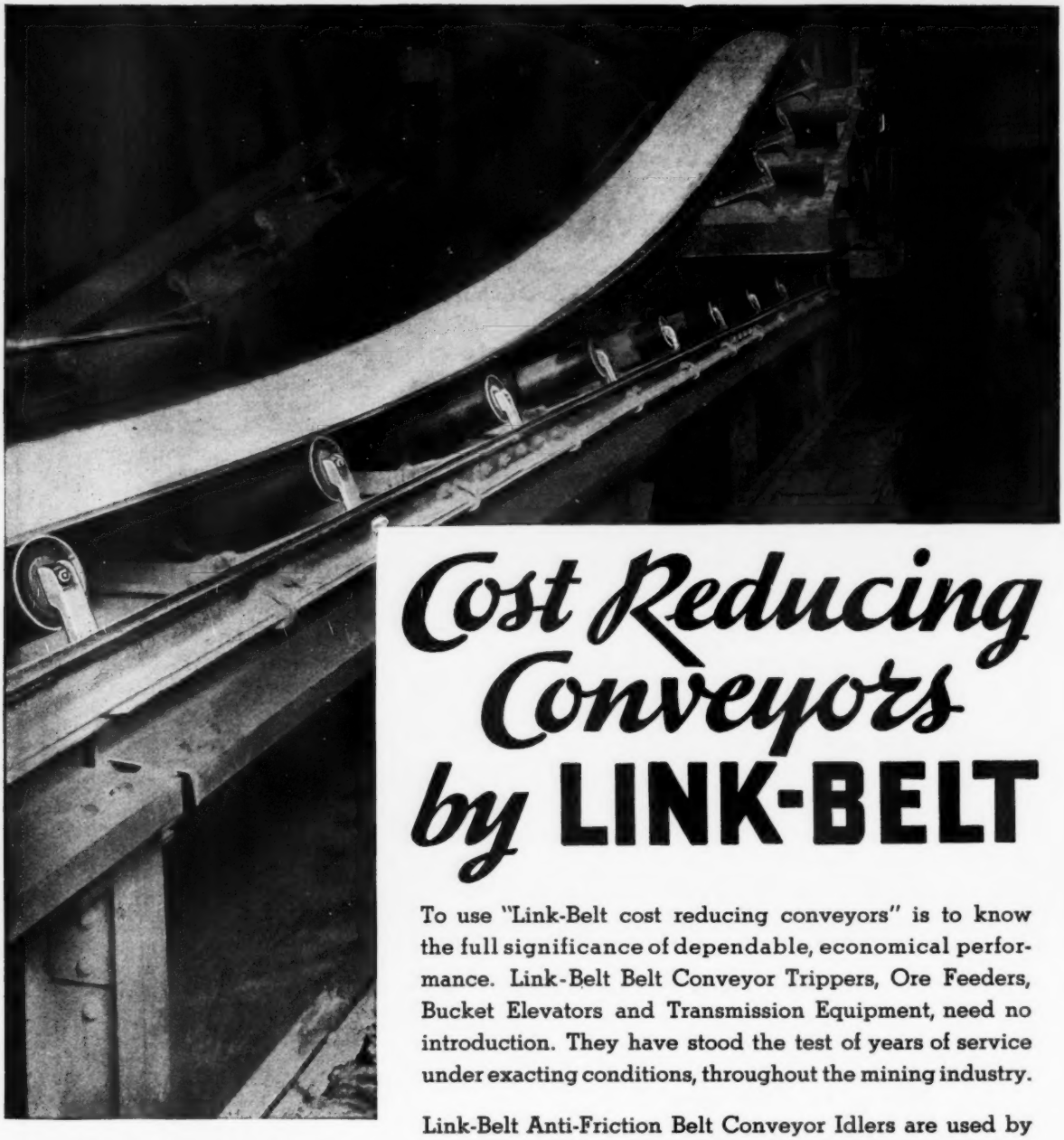

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The Mining Industry And The New Deal

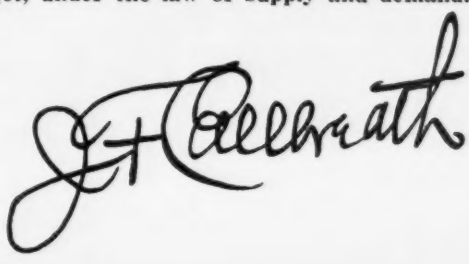
NO INDUSTRY has suffered more by the world-wide depression than the mining industry. No important industry has squawked less. The mining industry cannot eat its own products. It must sell its products in outside markets and with the proceeds must buy of the farmer his foodstuffs. He is, therefore, entirely dependent upon business conditions for any return from the fruits of his labor. The farmer's product on the other hand must be largely absorbed by the mining industry and the industries which are based upon the use of mine products. The farmer who does not raise the greater part of the foodstuffs for his family is not entitled to call himself a farmer. The farmer's product is a continuing necessity, and the food supply of the nation is seldom sixty days ahead of exhausted market conditions.

Many millions of the taxpayers' money have been wasted in a vain effort to aid the farmer. The mine operators, out of their surplus, if there was such, and more generally out of borrowed money, have provided for their employes whom they have carried upon unproductive payrolls in order to meet the emergency which otherwise would have appealed to public charity. The mining industry has found it very difficult to go along with the kaleidoscopic inefficiency of the National Recovery Administration. Some divisions of the industry have found it necessary to educate at least five different officials, to whom one after another, the subject-matter of its code has been passed in exasperating succession. It has found one after another code form as drawn by members of the Recovery Administration and approved by the specific industry entirely rejected by a succeeding deputy to whom consideration of the subject had been transferred. Hundreds of mining executives have found it necessary to neglect their business and be in Washington month after month in exasperating efforts to establish and secure approval of codes and now after ten months of effort only four mining codes have been actually approved. As we go to press we are advised that still further changes are to be made in all codes and that new and greater emergencies exist which justify the exercise of such action on the part of the Recovery Administration.

Notwithstanding these circumstances the mining industry has cheerfully supported the New Deal, always wondering how it would terminate and when, if ever, it would be possible to get down from the artificial conditions of the New Deal to conditions controlled by the law of supply and demand. Some divisions of the mining industry signed up their codes gleefully anticipating that the inducement offered by Section 3 (e) of the Recovery Act would be made effective, which provides for "limitation of imports which render ineffective or seriously endanger the maintenance" of such codes.

No action has been taken after months of waiting, during which time importations have been so great as to absolutely paralyze the industry and not only act to prevent it from employing more men, but force it to discharge the greater part of the men theretofore employed. And now it is proposed, by legislation, to give to the President complete authority to make bargaining tariffs, which action, it is understood, is to be under the management of the director of the Export and Import Banks, and who alleges that it is his first duty to further the interests of agriculture. It is stated that in order to find increased foreign markets for agricultural products that less important domestic industries are to be sacrificed by opening our markets to competing foreign goods to be taken in exchange. This is based upon the theory that any industry requiring a high tariff rate is necessarily an industry without a proper economic foundation and therefore may be justly sacrificed for the benefit of the farming industry which incidentally controls so large a voting power. The mining industry has never fully approved the plans of the New Deal. When the New Deal became a law it listened to a warning from high official circles that, unless the New Deal did succeed, there would never be another President of the United States. It determined that no act of its own should ever justify the statement that it had not cooperated with the expressed wish of the nation as crystalized into law. It was then and is now anxious to cooperate and to assist in every possible way and it still believes, that whether the New Deal shall be a success or otherwise, many Presidents will hereafter be elected as provided in that Constitution under which this country has grown to be the greatest in the world, which has raised the living conditions of all of its people to a higher state of civilization than any other nation.

Notwithstanding all of these conditions, the mining industry is still playing the game. It will continue to play the game in the hope that unwise and unconstitutional activities will be discontinued one at a time either by court order or otherwise, and that business will gradually adjust itself by a sliding down process from present levels, where losses are paid by mortgages upon the future, to the level of a balanced budget, under the law of supply and demand.



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A Journal for the entire mining industry published by The American Mining Congress

Managed Economy

IF ALL of the needs of the world could be known and cataloged, it might be possible for the brain trust's "managed economy" to be worked out effectively. Fortunately, this is impossible. Even the law of supply and demand must vary because people's wants and needs are not uniform. But if the facts could be ascertained with any degree of accuracy, we might then know how many men would be required to work in the mines, the shoe trade, or on the farms. We could then regiment our army of workers and produce just so many pairs of shoes, tons of coal, bushels of potatoes, or pounds of copper. This is the ultimate of communism—unworkable in any country.

This fruitless line of reasoning typifies some of the present thinking emanating from Washington. It is appalling to realize that such is the case. The situation demands the full mobilized strength of the industrial world, for the experiments already under way, in the egg and hatching, indicate that irrational reasoning and half-baked thinking are riding the high road of power.

The wants of the world have never been satisfied. The United States has come closer to the realization of this commendable ambition than any other country with its higher mass purchasing power through high wages. But with increased purchasing power our wants increase with startling rapidity. The good old course of following the law of supply and demand seems to be the only safe program, and all efforts to lead us along the path of communism must be forcefully combatted.

Those Mining Codes

UP TO the present time, four mining codes have been approved under the National Recovery Administration, i.e., bituminous coal, sand and gravel, quicksilver, and aluminum. It is stated that within a few days a material number of the mining industries will be brought under approved codes and will proceed to the organization of their national and divisional code authorities. The pronouncements of the Administration in the matter of industrial relations set-ups on the code authorities and in particular the statements to the press referring to the bituminous coal labor relations arrangement as ideal are significant.

The mining industries in some manner must meet the situation now created and in all wisdom and forethought these industries should immediately arrange a focal point—a clearing house for the posting of information particularly relating to industrial relations. If each group shall go its separate way they will be subject to the same tactics which have brought endless trouble to the various bituminous coal fields of the country. One industry at a time will be singled out by the labor group which functions as a unit. Hours, wages, and working conditions established as precedents in one property or industry will be forced upon all. The mining industries must meet this inevitable attack with a united front and thereby avoid endless chaos and expenditure.

The Convention

THE adoption of the 7-hour day, the 5-day week, and the $5 wage scale in the coal mining industry only emphasizes the interest of the coal operator in the coming convention and exposition of The American Mining Congress to be held at Cincinnati, Ohio, May 7 to 11. The Program Committee has been working diligently and has practically completed a program which is one of the finest ever presented to one of these conventions. It comprises some 39 papers, each devoted to a practical operating problem of timely interest. These papers are to be presented by a group of eminently competent operators. Together with the exposition, this event becomes one of tremendous importance. It offers the maximum return. The industry is depending upon this convention and exposition to present all of those things which will aid in its time of need, and it is quite apparent that those who attend, in whatever capacity, will not be disappointed.

Nature's Balance

THE Science of Biology long ago discovered that certain balances in nature exist between different forms of animal and vegetable life. These tend to prevent the dominance of any one particular species, and if that balance is disturbed, the resulting predominance of any one species usually tends to its own destruction. For example, if birds did not eat insects, then the insects would ultimately increase to a point where they would destroy all vegetation and bring about their own extinction.

In our industrial structure, there are undoubtedly some balances that are necessary to our industrial life. Certain legislative forces are now at work trying to create a new set of conditions which may disturb existing balances and bring disaster. The Wagner bill, for example, would make all workers members of one federated trade union. If this comes about and there is no restraining or corrective force in opposition, then the question naturally arises as to whether this dominance of trade unions will not ultimately destroy the very industry itself upon which the workers must live. If so, what will become of the country while this process is going on and a new balance is being set up?

There is no teacher like Mother Nature, and she has worked out the right answers. Otherwise we would not be here. And it might be well at this time to cite one more example—for those communistically inclined. The honey bee has developed an almost perfect communism, but that does not prevent someone else from taking the honey.

EQUITABLE MINE TAXATION

By H. B. FERNALD*

THE Secretary of the Treasury in his statement to the Senate Finance Committee on March 6, 1934, regarding the proposed changes for "the elimination of the serious loopholes which our experience has shown to exist in the present income-tax law," stated:

"No taxpayer can legitimately complain of these changes, since they result in a more equitable distribution of the tax burden over those persons who are best able to sustain it."

We believe this is a fair statement of the position of the Treasury Department and of the House of Representatives as to the purpose and intent of the changes and that it is in this spirit that the Senate Committee will consider them.

Perhaps there can be no better statement of the fair ground on which taxpayers may meet their Congress in considering these changes. We shall assume it is the intention that these changes should result in a more equitable distribution of the tax burden over those persons best able to sustain it and that it is not intended to make such changes as give to any taxpayers legitimate ground for complaint.

Accordingly, we briefly present certain points where we believe the facts show that the changes will not result in equitably placing the tax burden on those best able to sustain it.

1. *Foreign Tax Credit:*

The proposal of the House Bill in Section 131 (b) (1) and (2) for cutting in half the credit for foreign taxes as heretofore allowed seems based principally on the thought that this will yield some $5,000,000 a year additional revenue to the Government. We believe that this assumption is erroneous and that in fact a reduction, rather than an increase, in Government revenues would result from the proposed change.

In the effort to assemble and present pertinent facts on this subject, data have been secured from six of the leading companies engaged in mining abroad. These companies furnish a very large tonnage of products to be smelted and refined in this country, although the resulting base metals are not marketed here but sold to foreign consumers. They have in connection with this foreign business expended in the United States an annual average of approximately $16,000,000 for materials and supplies and an annual average of approximately $19,000,000 for wages, salaries, services, freight, insurance, taxes and other expenditures, or a total annual average expenditure in the United States in connection with their foreign business of $35,000,000. Since the foreign tax credit first became effective in 1918, there has been spent by these companies in this country as a result of their foreign business, some $600,000,000.

All of these expenditures have contributed to employment, created business and, both directly and indirectly, aided in the production of incomes subject to our income and profit taxes here.

These expenditures include large amounts for freight to the railroads and we need not emphasize what additional business for the railroads means in wages, materials and supplies and to every investor in railroad securities. It has meant millions of dollars of ocean freight for the American Merchant Marine. It has meant a large business in smelting and refining by plants in the United States of mineral products which, except for the American interest in these properties, would never have been brought to this country. Millions of dollars of insurance premiums have been paid to American companies on the properties and products of these companies.

These expenditures have aided the general welfare of the country, and they have also meant very material contributions to the taxes of our Federal and our other governments.

Furthermore this group of companies has distributed in this country out of the earnings from this foreign business a total of interest and dividends paid during the period 1918 to 1933, inclusive, of approximately $400,000,000.

Our Government has derived large revenues from the individual taxes which had to be paid upon such amounts as they were distributed to stockholders, bondholders, etc. Then again, these funds as disbursed by those who received them have given rise to further wages and business which yield further taxes as these funds circulate through the country.

These are only incomplete figures, far from the totals involved, but they are sufficient to show that even though the full foreign tax credit is given, large revenues accrue to our Government from this foreign business.

The coal regions are directly interested in the export of coal. For the four years 1928 to 1931 inclusive our exports of anthracite, bituminous and coke averaged in value about $90,000,000 per year. This business largely results from established outlets created by American firms and American interests abroad. This and more of this export business in coal is certainly needed for the benefit of the coal regions.

Any additional tax on this foreign business is just so much reduction in incentive to try to build up and develop our foreign trade. Furthermore the double taxation often means a direct competitive disadvantage against those of other nations who are exempt from double taxation.

2. *Consolidated Returns:*

No stronger reasons for the consolidated return provision can be given than the statement of the Treasury Department's position as set forth in the House Committee's report on this bill (page 17). It is admittedly the one way to secure a correct statement of income of affiliated corporations, with elimination of intercompany transactions, thus guarding against a shifting of profits from one company to another and getting an accurate picture of the earnings of the group as a whole. The consolidated enterprise actually pays tax on its real income. Administration is simpler because the Treasury is able to deal with a single taxpayer and to eliminate the necessity of examining into the bona fides of thousands of intercompany transactions. Accordingly, the House Committee and the House itself concluded that it would be undesirable to abolish

* Loomis, Suffern & Fernald statement, on behalf The American Mining Congress, before Senate Finance Committee. Chairman, Tax Committee, The American Mining Congress.

consolidated returns. There was, however, written into the bill a provision which would place a penalty tax of 2 percent on consolidated net income where consolidated, rather than separate, returns were used.

The reasons stated for continuing the provision for consolidated returns seem to us equally effective reasons for not discouraging them by placing a penalty tax upon them.

It is doubtless true that there will be corporations that would continue to submit their consolidated returns even though this 2 percent penalty was imposed. There will be many, however, to whom this penalty tax will be enough to make them shift from a consolidated to a separate basis. More important than this is the fact that by imposing a penalty tax on consolidated returns, the Government is taking a position that it does not wish to have the tax paid on the true net income of a consolidated enterprise but prefers to have the tax imposed with all the artificialities which can be brought into separate corporate organizations. We urge that the spirit and intent, as well as the letter of the law, should be the imposition of tax on true income and no penalties should be imposed on returns which will show the true net income and the tax applicable thereto.

3. *Denial of Deduction for Losses:*

Section 117 gives a very broad definition of what constitute capital assets and provides that losses from sales or exchanges of capital assets shall be allowed only to the extent of the gains from such sales or exchanges.

We join with others in urging before you the essential unfairness of taxing capital gains but denying deduction for capital losses except to the extent that such gains and losses occur within the same taxable year. It is certainly not equitable treatment as between taxpayers to say that one taxpayer who has a gain in one year and a loss in another shall be fully taxed on his gain in addition to any other income he may have in the year of gain, but will not be permitted to deduct his loss from his other income in the year of loss, whereas the man who happens to have both gain and loss in the same year can offset the one against the other. The man who has his gain in December and his loss in the next month of January would be allowed no deduction for his loss, whereas the man with a gain in January and a loss in the following December, or a loss in January and a gain in the following December would be allowed his offset one against the other.

Furthermore, many items of capital gain or loss are closely related to so-called ordinary income. For example, when a taxpayer purchases stocks or bonds, (possibly acquiring an interest in a corporation he is attempting to develop), if he receives any interest or dividends, these are to be fully taxable as received, but if ultimately the investment is sold or liquidated at a loss the loss is to be disallowed even though the entire amount recovered through interest, dividends and final selling price may be less than the original investment.

There even seems question of whether ordinary plant assets would fall within this designation so that when they were dismantled and sold the loss which is a very definite business loss, might be disallowed.

Additional revenue requirements should not be met by departure from sound principles upon which tax-paying ability is determined and measured. Capital losses are just as real as other losses. They reduce ability to pay to an equal extent. They are a proper deduction in computing taxable net income, whether or not a capital gain has been currently realized. The sale of assets held more than two years certainly affords no opportunity for tax avoidance.

H. B. Fernald

The proposed change in existing law is unnecessarily harsh and inequitable.

4. *Rate of Tax on Capital Gains:*

Section 117 of the bill presents an entirely new basis for taxation of gains on sale or exchange of capital assets. It abandons the fundamental principle which was the basis for the 12½ percent rate of the present law—viz, that this rate was about as high as it was possible to impose on sales of capital assets without substantially blocking the sales. Only under extreme conditions will a man be likely to sell valuable property if it means payment of a substantial proportion of its value to the Government as a tax. The man who may have paid $10,000 for a property now worth $100,000 is not likely to sell it if he has to give up $30,000 or $40,000 of his price as Government tax. He will not be inclined to sell a $100,000 property if he will only have $60,000 or $70,000 net to show for it. The higher tax rates which this proposal involves will defeat themselves. For these reasons we believe the law should impose the flat maximum limit of 12½ percent on capital gains, at least as to property which has been held for more than two years.

For the same reasons we urge that the provisions of Section 102 of the 1932 act should still be continued, limiting the tax to 16 percent of the selling price in the case of sale of mines and oil or gas wells where the principal value has been demonstrated by the taxpayer. While this is of limited application, it is of importance in some cases. If a man acquires a property and within a short time proves he has a valuable mine, oil or gas well, the sale of his property to others who might be able better to carry it forward and develop it will probably be stopped unless some such provision as this is in the law.

5. *Additional Tax on Dividends:*

The proposed scale of individual tax rates differs principally from the present law in that it would decrease the present 8 percent normal tax by 4 percent and add this 4 percent to the surtax rates. The main result of this is to place an additional 4 percent tax on dividends. The profits represented by these dividends have already been subject to tax in the hands of the corporation. The basic principle evidenced by our earlier income tax laws was that the earnings of the corporation should be taxed at their source and then on distribution to stockholders would be exempt from individual tax to an amount equal to the corporate rate. Existing law has already departed from that principle when it taxes these earnings 13¾ percent to the corporation but allows a maximum 8 percent normal tax exemption when received by the stockholders. The pending bill would reduce this normal tax exemption to 4 percent, although the corporation would be required to pay 13¾ percent on these earnings. We believe this is unfair and excessive taxation on such distributions of corporate earnings.

* * * * *

There are other points which we can only briefly mention to support what others are presenting to you but we wish to record that these are of substantial interest to the mining industry.

6. *Exchanges and Reorganizations:*

The proposed change in definition of "reorganization" we believe would be unfortunate, giving uncertainty rather than definiteness. We also believe the proposed elimination of Section 112 (g) is not called for. Where the taxpayer receives simply two pieces of paper to indicate the same property ownership previously evidenced by a single certificate, we see no reason for imposing the tax. Where cash or other real assets are distributed, the tax would be imposed under present law. We believe this is as far as the law should go.

(*Concluded on page* 34)

RECIPROCAL TARIFFS and INDUSTRY

By JAMES A. FARRELL *

THE bill before the Ways and Means Committee, H. R. 8430, is for the purpose of promoting foreign trade; its provisions, however, affect materially some of the basic principles of tariff making and it is to those principles primarily that I shall direct my remarks.

In May of last year, the chambers of commerce and trade associations constituting the membership of our organization voted in favor of the initiation of negotiations for reciprocal tariff agreements, as follows:

"The safeguarding and advancement of our foreign trade should be the purposes of a vigorous foreign commercial policy of our Government. Adaptation of our American economic structure to present world conditions calls for most careful scrutiny of existing policies. Keeping in mind always the necessity of assuring stability to our internal industrial and agricultural enterprises, through reasonable protection for American industry, our Government should have power to initiate reciprocal tariff arrangements with foreign countries where such bargaining would be clearly in our national interest. Such agreements would complement our existing flexible tariff in establishing for our country a tariff policy fair alike to our home industry and our competitors abroad."

The National Chamber's interest in reciprocal trade negotiations has been due in large part to the belief that the United States has been slower than other leading industrial nations to recognize the important place that foreign trade occupies as a stimulant to domestic recovery and as a permanent reinforcement of our national economic structure. The depression, since 1929, being one of drastic decline in buying power throughout the world, resulting in serious curtailment of international trade, has affected the United States more acutely than most countries and created a serious problem of unemployment.

Seven million persons, it is estimated, are dependent for their livelihood on our foreign trade. It is impossible, therefore, to deal effectively with the problem of unemployment without taking into account the vital importance of our overseas commerce as a means indispensable to the success of the National Recovery Act.

The policy of bargaining our way to the markets of the world by means of reciprocal trade agreements is one to which Congress should give careful consideration. Other countries have delegated these powers to the Executive and have already, as in the case of Great Britain and her Dominions, made considerable progress ahead of the United States in making foreign trade promotion instrumental to national economic recovery.

Our reciprocal trade agreements should be based on the unconditional most-favored-nation principle, and for this reason should avoid quotas and other artificial plans inconsistent with this principle. While our large excess of exports over imports—amounting last year to $226,000,000—supplies a field for investigation regarding the extent to which the United States, without injury to our essential domestic industries, may absorb an increasing volume of imports, the principle of reasonable and adequate protection of our home market is closely related to the problem of unemployment and the maintenance of our standard of living.

Bilateral trade agreements, as a long range view of foreign trade promotion, should be entered upon with the conscious aim of harmonizing each agreement with our trade relations with other countries. It has been urged, for example, that if we sell Russia dairy cattle, cotton and hogs on a long-term credit basis, we should arrange at the same time for imports of enough Russian manganese, furs, gold, platinum or other products to offset the sale. This has been recommended by some as barter on a refined basis. While it may be possible to buy from Russia an increasing proportion of some of these goods we cannot, without serious injury to United States interests, import, for example, Russian manganese in any quantity. Of the 500,000 tons of manganese required by our steel industries, 50,000 tons are obtained from domestic sources. The balance is imported from mines in Brazil, Cuba and the west coast of Africa, owned and operated by companies in the United States. Any diversion of this trade to Russia would mean the closing down of these mines, dislocation of labor, and loss to American investors. I refer to this as an example of loose thinking by some who profess to see in barter of this kind a return to international prosperity.

The fallacy that international trade means a dollar for dollar trade between two countries is the false premise upon which this idea of barter rests. A glance at the statistics relating to our foreign trade will indicate how impossible it is for the United States to agree to the proposition that she must buy from each country in value the equivalent of what she sells to that country. Our visible balance of trade is unfavorable with Latin America as a whole and with China, but favorable with Europe as a whole. If we follow the path of sane internationalism in our trade policies, we shall avoid in negotiations with any country deals that discriminate against other countries with whom it is necessary to maintain satisfactory trade relations.

Methods of Bargaining

Too frequently in discussing tariff bargaining emphasis is laid upon the reduction of rates of duty as the main instru-

* Representing the Chamber of Commerce of the United States.

Statement on tariff legislation made to the Ways and Means Committee of the House of Representatives March 9, 1934.

mentality at the disposal of our negotiators. Too often, however, we shall find that the foreign negotiator is bargaining from a level made artificially high in advance of bargaining negotiations.

I should like to present for the record a study on "Reciprocal Tariff Negotiations" made by the Foreign Commerce Department of our organization outlining 14 varieties of considerations involved in tariff bargaining, with special information as to our trade and tariff relationships with Argentina, Brazil, Colombia, Portugal, and Sweden—countries with which the United States has already undertaken to negotiate reciprocal agreements. These serve to bring out the fact that reciprocal tariff negotiation should envisage a much wider field than just reduction of rates.

In tariff bargaining between nations there enter, in addition to agreements to reduce rates, the following:

The maintenance or "binding" of rates over a definite period.

The maintenance of a free list status of products over a given period (and it is here that our own Government has a wide field of operation, due to the fact that 63 percent of our imports in 1933 came in duty free).

A threat to impose higher rates of duty in case of countries discriminating against American products.

Maintenance or increase of a percentage of imports (an offer which will doubtless be made to our Government by countries resorting to quotas).

Special rates of duty on seasonal imports during the off season in the importing countries (especially applicable to Latin America).

Modification of foreign exchange controls (an offer which may possibly be made us by countries now maintaining such restrictions).

Imposition or relaxation of duties to cover depreciated currency imports.

Concessions on international debts.

Modification of arbitrary customs valuations (such valuations are especially burdensome in Canada).

Modification of enforced use of domestic products (applying particularly to agricultural products in Europe).

Outright financial and other assistance.

Modification of existing colonial preferences.

A direction toward favored countries of Government-controlled orders by countries such as Russia.

A discussion of these 14 considerations is given in greater detail in the pamphlet which I am presenting, and which I hope will prove of interest to the committee.

Previously in these hearings the committee has expressed interest in commodities which might be of special interest to foreign countries and to ourselves in reciprocal negotiations. The pamphlet herewith lists our leading exports to and leading imports from Argentina, Brazil, Colombia, Portugal, and Sweden. The pamphlet shows the share which each product constitutes in our total trade with each particular country, and also shows whether or not the product is dutiable in the country of destination.

The significant fact emerges from this study that of the products listed in the statistical tables, most of our exports have a dutiable status in the foreign tariffs, and most of our imports from these five countries have a duty-free status in the United States tariff.

Protection for American Agriculture and Industry

I have read with special interest the following paragraph contained in the message transmitted to the Congress by the President on March 2:

"You and I know, too, that it is important that the country possess within its borders a necessary diversity and balance to maintain a rounded national life, that it must sustain activities vital to national defense and that such interests cannot be sacrificed for passing advantage. Equally clear is the fact that a full and permanent domestic recovery depends in part upon a revived and strengthened international trade and that American exports cannot be permanently increased without a corresponding increase in imports."

I think it significant and also intentional in this and in other portions of the President's message that special emphasis was placed upon the importance of "assurance that no sound and important American interest will be injuriously disturbed."

Our organization has long adhered to the principle that there should be "reasonable protection for American industries subject to destructive competition from abroad and which are of benefit to any considerable section of the country." This, we think, should be the first consideration. Reciprocal tariff negotiations should be secondary to it.

We would call attention, therefore, to the fact that the proposed bill, while placing a 50 percent limitation upon the authority to modify duties, and also prohibiting the transfer of any article between the dutiable and free lists (both of which are part of the present flexible provisions of the tariff), does not contain the much more essential basic tariff formula of basing rates of duty, applying to any commodity, on the principle of equalizing foreign and domestic production costs plus transportation. When Congress delegates to the Executive authority to modify rates it is of first importance that Congress give indication to the Executive of its idea as to a "consistent tariff policy." In laying down a controlling formula, such as the equalization of production cost formula, to which the Executive should conform, whether changes be under a flexible tariff or under reciprocal negotiations, the Congress is contributing the composite views of its members as to what should constitute the basic tariff policy of the United States. And, further, by setting down such a formula it is supplementing the mathematical limitation of 50 percent with a much more fundamental and desirable limitation which, in my opinion, would, as it has done in the case of the flexible tariff, help to assure the constitutionality of such delegation of authority.

I would therefore submit for your consideration that there be some provision whereby changes made in tariff rates, in connection with reciprocal negotiations, should not be below such reasonable protective levels as may be determined under a formula established by Congress.

Flexible Tariff

Might I also draw your attention to a change proposed by this bill which in our opinion is not necessary; that is the repeal of the flexible provisions—Section 336 of the Tariff Act of 1930. In bringing about a rounded "national life," which the President urges in his message, it is important that we have some machinery for adjusting tariff rates to the fundamental tariff policy established by the Congress. I see nothing inconsistent with retaining the flexible provisions of the present Tariff Act and accomplishing the objectives set forth in the President's message. There may be changes necessary to make the functioning of the flexible provisions clearer and simpler in getting results. There is great merit in preserving for American agriculture and industry the opportunity to present its case in connection with tariff modifications. Likewise our tariff law—in contrast to the laws of most foreign countries—is particularly generous in permitting the foreign producer also to have his day in court, in connection with changes affecting his exports.

I understand that already it has been suggested in these hearings that the bill will be amended so as to retain the flexible provisions, but to provide that the flexible provisions should not be operative as respects products included in reciprocal trade agreements.

Assuming, as suggested above, that reciprocal negotiations would not reduce rates below reasonable protective levels,

SHEARING THE SHEEP

—The Washington Post

I can see no objection to this compromise provision.

Our organization has been in favor of the establishment of a Tariff Adjustment Board to administer adjustable rates under the flexible provisions. In taking this position we have felt that there was a wide field of activity for the existing Tariff Commission in the determination of facts pertinent to all tariff matters. The judicial function of receiving testimony and formulating recommendations in accordance with the tariff law, under the flexible provisions, we have felt, might well be entrusted to a Tariff Adjustment Board.

Insofar as changes are to be made in connection with reciprocal negotiations, it is also our feeling that a board of this sort could be of constant value in receiving the testimony of American businesses affected by proposed modifications of rates in connection with the demands and bargains being discussed with foreign governments.

We would recommend, therefore, that Section 336 should not be repealed and that careful consideration be given to the establishment of a Tariff Adjustment Board with a view to expediting action under the flexible tariff.

Opportunity for Hearing and Investigation

A feature of the pending bill which will, I am sure, meet with opposition on the part of American industry is the failure of the bill to provide any opportunity for hearing and investigation. It is beyond the power of any bureau or commission to know from day to day, in a world of constantly changing economic conditions, what will be the effect upon our economic life, upon our national defense, upon employment, upon recovery activities, of changes which might be proposed by foreign negotiating nations. It has long been recognized as "fair play" that both the American producer and the foreign producer have a chance to present facts bearing upon tariff changes. This has been part of our flexible tariff. It is also part of our customs law affecting the imposition of duties and classification of commodities. It is part of our procedure under the import provisions of the National Recovery Act.

I would recommend therefore that adequate provision be made in this legislation for hearings and investigations in connection with contemplated changes under reciprocal agreements.

National Industrial Recovery Act

Under the National Industrial Recovery Act manufacturers have increased rates of pay and have shortened hours of work. These cooperative acts upon the part of American industry have increased costs and have in proportion decreased the amount of protection represented by rates of duty in the existing schedules. I appreciate the fact that, on the other hand, the revaluation of the dollar has for the time being increased the dollar laid-down cost of foreign merchandise. We are thus confronted with these and many other interrelated factors bearing upon the ability of American producers to hold their domestic markets against foreign competition.

In his message to Congress the President states that due heed must be paid to the requirements of the various branches of the recovery program, such as the National Industrial Recovery Act.

This would appear to be a situation where careful investigation by an expert Government body and the presentation of testimony by interested parties would be highly important.

(*Concluded on page* 17)

NOT WITHOUT FINE, OLD HISTORIC PRECEDENT

WHEELS OF GOVERNMENT

TWO issues of great concern to the mining industries have been the subject of bitter controversy in Washington: the Wagner Labor Board bill and the copper code. Senator Wagner has taken his case to the public, through the radio and other means, to win support for his measure. The A. F. of L. is solidly behind him. Secretary of Labor Perkins has testified in favor of the measure before the Senate Labor Committee.

Opposition to the bill (at this date, March 27), has only begun to express itself. The captive mines have stated their position frequently in negotiations with the National Labor Board. Other large companies have done likewise. The steel industry will doubtless register its protest before the Senate Committee. A statement issued following a meeting of steel executives in New York at the American Iron and Steel Institute sets forth that "the bill is designed to control all labor matters by political rather than economic forces and to destroy the friendly relationships now existing between employers and employes, and thus disrupt the industrial welfare of the nation."

It is further asserted that "the chief object of the bill is to turn the control of American industry to a national labor union monopoly, notwithstanding the fact that national labor unions by appeals for voluntary membership over a period of many years have succeeded in enrolling less than 10 percent of the workers of this country in their ranks. . . . The bill seeks to create a permanent National Labor Board with more power than any governmental agency has ever had or than any court in the land possesses today. . . . Under the provisions of the bill it is an offense, subject to fine or imprisonment, for any employer to participate in any way in any organization of his employes or even to compensate them for working time lost while engaged in furthering the interests of their fellow employes or settling their difficulties with the management. . . ."

Vigorous protest against the proposed code offered by the copper industry by Arizona interests and the frank declaration of Deputy Administrator King regarding that code indicate the difficulties to be encountered in this situation. In offering a code formulated by NRA for the consideration of the industry, Deputy King stated: "I must emphasize this code is not a plan of the Administration, but the Administration does feel that the code as presented by the industry is not satisfactory and is not a final, not a proper solution of its problems." One of the questions on which great difference of opinion exists is that of wages. The code suggested by NRA provides substantially higher minimums than that proposed by the U. S. Copper Association. The question of cheap Mexican labor in the Southwest is a knotty aspect of the wage question.

There is also likely to be considerable controversy regarding the marketing provisions suggested by NRA, particularly the distribution of allocation of sales among the various companies. Filing of prices is also a moot point in the industry.

The labor situation has developed into a network in which the whole of American industry is tightly woven in by what is or will likely be a labor government. Strikes or impending strikes are develop-

ing so thick and fast that only the major controversies can be kept track of.

In the meantime, the price control question is loose again, with amunition furnished by the report of the Federal Trade Commission on price-fixing in the steel industry under NRA. The anthracite code has apparently gone into hibernation, pending some general code revisions by the Code Authorities. The wage agreement for the Appalachian bituminous fields is confronted by a demand by John L. Lewis for a 7-hour day and a $5 per day basic wage rate.

Secretary Perkins has given her approval of the Wagner-Lewis unemployment insurance bill to the House Ways and Means sub-committee considering the legislation. She testified that the 5 percent excise tax on the total annual pay roll of industrial employers which the bill provides is "both profitable and fair." Such a tax, according to her estimate, would produce revenues of $1,000,000,000 a year.

The bill under consideration (S. 2616) provides (Section 2): "There shall be levied, assessed, and collected annually from every employer . . . for the taxable year commencing July 1, 1935, and for each taxable year thereafter, an excise tax measured by an amount equal to 5 percentum of the employer's pay roll as defined in Section 1 of this Act (Section 1 defines pay roll as total of all wages paid excluding those on fixed salary of $250 monthly or more): Provided, That said tax shall be paid after the close of each taxable year and may be paid in quarterly installments. . . ."

Various conditions are prescribed in the bill for credit allowances. These have to do largely with contributions required by state laws.

Section 3 provides "for the systematic payment, to all unemployed persons eligible under such law, of cash compensation which shall be payable to them as a matter of right: Provided, that compensation rights and payments shall commence not more than 12 months after contributions begin under such law." The same section of the bill specifies eligibility conditions applying to payment of compensation. It provides for total unemployment benefits "at a minimum rate which shall equal or exceed either $7 per week, or else the employe's average wage earnings for 20 hours of work."

Section 3 (i) "Provides that every unemployment fund required thereunder shall either be held by an officer or agency of the state acting as custodian, or shall be held strictly in trust under such conditions approved by the state agency as will in its judgment assure the safety and liquid availability of such unemployment fund or funds: Provided, that where any law permits an employer of demonstrated financial strength to contribute to an unemployment fund in the form of an accounting reserve, such law shall require such employer to maintain with the state such a collateral deposit of securities approved by the state agency as shall at all times have a market value at least equal to the current total of such permitted unemployment fund or reserve."

WE ADMIT WE DON'T KNOW MUCH ABOUT ART, BUT—

WHAT'S THE MATTER WITH THAT EAGLE, I ASK YOU?
—AFTER ALL— A FEW TAIL FEATHERS WOULD IMPROVE IT LIKE THE DICKENS!
CODE ENFORCEMENT
LABOR'S RIGHT TO ORGANIZE

—Washington Daily News

Section 3 (j) "Provides for administration or supervision by a state agency, and provides adequate funds to finance administration and suitable penalties to secure enforcement of the law's provisions; and secures to each party in interest a right to the hearing and determination of any disputed compensation claim by an impartial administrative agency authorized by such law to decide such claims and to determine finally all questions of fact involved therein; and assures to employers and employes, through representation on advisory committees, an effective voice in the law's administration."

Section 4 (a) provides that "The Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury shall prescribe and publish all needful rules and regulations for the enforcement of the provisions of this Act.

"(b) Every employer liable for tax under this Act shall make a return under oath within one month after the close of the year with respect to which such tax is imposed to the collector of internal revenue for the district in which is located his principal place of business or, if he has no principal place of business in the United States, then to the collector of internal revenue at Baltimore, Md. Such return shall contain such information and be made in such manner as the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury may by regulations prescribe. The tax shall, without assessment by the Commissioner or notice from the collector, be due and payable to the collector within one month after the close of the year with respect to which the tax is imposed. If the tax is not paid when due, there shall be added as part of the tax interest at the rate of 1 percentum a month from the time when the tax became due until paid. All provisions of law (including penalties) applicable in respect of the taxes imposed by section 600 of the Revenue Act of 1926 shall, insofar as not inconsistent with this Act, be applicable in respect of the tax imposed by this Act. The Commissioner may extend the time for filing the return of the tax imposed by this Act, under such rules and regulations as he may prescribe with the approval of the Secretary of the Treasury, but no such extension shall be for more than 60 days.

"(c) Returns required to be filed for the purpose of the tax imposed by this Act shall be open to inspection in the same manner, to the same extent, and subject to the same provisions of law, as returns made under title II of the Revenue Act of 1926.

"(d) The taxpayer may elect to pay the tax in four equal installments, in which case the first installment shall be paid on the date prescribed for the filing of returns, the second installment shall be paid on or before the last day of the third month, the third installment on or before the last day of the sixth month, and the fourth installment on or before the last day of the ninth month, after such date. If any installment is not paid on or before the date fixed for its payment, the whole amount of the tax unpaid shall be paid upon notice and demand from the collector.

"(e) At the request of the taxpayer the time for payment of any initial installment of the amount determined as the tax by the taxpayer may be extended under regulations prescribed by the Commissioner, with the approval of the Secretary, for a period not to exceed six months from the date prescribed for the payment of such installment. In such case the amount in respect of which the extension is granted shall be paid (with interest at the rate of one-half percentum per month) on or before the date of the expiration of the period of the extension."

President Roosevelt has expressed his support of unemployment insurance legislation in a letter to Chairman Doughton, of the House Ways and Means Committee, in response to an inquiry from Mr. Doughton regarding his views on the Wagner-Lewis bill. The President wrote: "I need not tell you that for a long time I have advocated unemployment insurance as an essential part of a program to build a more ample and secure life. The loss of a job brings discouragement and privation to the individual worker and his family. If an insurance or reserve fund has been accumulated, even a small payment from it at such a critical time will tide over the worker and keep up his morale and purchasing power."

In view of the importance of the Wagner bill (S. 2926), on which hearings are in progress before the Senate Committee on Labor, we here summarize and reproduce the salient portions of the measure.

Title I of the bill is given over largely to the purposes of the act and to definitions. Section 2 states: "It is hereby declared to be the policy of Congress to remove obstructions to the free flow of commerce, to encourage the establishment of uniform labor standards, and to

provide for the general welfare, by removing the obstacles which prevent the organization of labor for the purpose of cooperative action in maintaining its standards of living, by encouraging the equalization of the bargaining power of employers and employes, and by providing agencies for the peaceful settlement of disputes."

Section 4 declares: "Employes shall have the right to organize and join labor organizations, and to engage in concerted activities, either in labor organizations or otherwise, for the purposes of organizing and bargaining collectively through representatives of their own choosing or for other purposes of mutual aid or protection."

Section 5 defines unfair labor practices. These include (1) To attempt in any way to impair right of employes to organize; (2) to refuse to recognize or deal with representatives of employes; (3) to take part in any manner in elections of labor organizations; (4) to contribute in any material way to the support of a labor organization; (5) to fail to notify employes when the contract or agreement entered into in any way conflicts with provisions of the act; (6) to engage in any practice which encourages or discourages membership in any labor organization.

Section 6 declares: "The several District Courts of the United States are hereby invested with jurisdiction to prevent and restrain any unfair labor practice that burdens or affects commerce or obstructs the free flow of commerce, or has led or tends to lead to a labor dispute that might affect or burden commerce or obstruct the free flow of commerce, and it shall be the duty of the several district attorneys of the United States, but solely at the request of the National Labor Board, in their respective districts, under the direction of the Attorney General, to institute proceedings in equity to prevent and restrain any such unfair labor practices."

Title II sets up a National Labor Board of seven members appointed by the President, two to represent employes, two to represent employers, and three to represent the general public. Section 205 empowers the board "to prevent any person from engaging in any unfair labor practice that burdens or affects commerce. . . ." It is also provided that where an order to cease and desist from an unfair trade practice is ignored, "the board may petition any District Court in the United States within any district wherein the labor practice in question was engaged in or wherein such person resides or carries on business, or the Supreme Court of the District of Columbia, for the enforcement of the order of the board. . . . No objection to the order of the board shall be considered by the court unless such objection shall have been urged before the board. . . . No court shall have any jurisdiction to enjoin the board or an examiner from taking action or holding hearings under a complaint. . . ."

The same section provides that "any person aggrieved by an order of the board may obtain a review of such order in any District Court of the United States . . . by filing in such court, within 10 days after the entry of such order, a written petition praying that the order of the board be modified or set aside in whole or in part."

Section 206 states: "The board shall have power to act as arbitrator in labor disputes. When any of the parties to a labor dispute agree to submit the whole or any part thereof to the arbitration of the board, and the board accepts such submission, the agreement shall be valid, irrevocable, and enforceable as to the submitting parties save upon such grounds as exist at law or in equity for the revocation of any contract. In any case accepted by it for arbitration the board shall have power to issue an award applicable to the submitting parties."

This section provides that "the court may make an order vacating the award upon the application of any party to the arbitration if the board exceeded its powers or executed them so imperfectly that a mutual and definite award upon the subject matter was not made."

Section 207 provides that where there is a dispute as to who are the representatives of employes, "the board . . . may investigate such dispute and certify . . . the name or names of the individuals or labor organizations that have been designated and authorized to represent employes. In any such investigation, the board shall be authorized to take a secret ballot of employes, or to utilize any other appropriate method to ascertain their representatives. The board shall decide whether eligibility to participate in elections shall be determined on the basis of employer unit, craft unit, plant unit, or other appropriate grouping."

Title III of the act sets up in the Department of Labor the United States Conciliation Service under a Director of Conciliation. Section 302 of this title declares it to be the duty of this agency "to offer its services to the parties to any labor dispute, and to attempt to adjust such dispute by conciliation or mediation, or by arranging for voluntary arbitration."

Section 303 states: "Nothing in this Act shall be construed so as to interfere with or impede or diminish in any way the right to strike."

Under Section 304 it is declared that "Any term of a contract or agreement of any kind which conflicts with the provisions of this Act is hereby abrogated, and every employer who is a party to such contract or agreement shall immediately so notify his employes by appropriate action."

This section also provides that whereever the provisions of Section 7-A of the Recovery Act or the Act entitled "An Act to amend the Judicial Code and to define and limit the jurisdiction of courts sitting in equity, and for other purposes" which was approved in 1932, conflicts with the application of the provisions of this Act, "the provisions of this Act shall prevail: *Provided*, That in any situation where the provisions of this Act cannot be validly enforced, the provisions of Section 7-A of the National Recovery Act and/or of such Act of March 23, 1932, shall apply."

Reciprocal Tariffs and Industry

(*Continued from page* 14)

And in closing may I reiterate the three recommendations we have to make:

(1) That, in granting authority to make tariff changes in the interest of reciprocal tariff negotiations, the Congress write into the law the definite limitation that no rate be lowered to a point where American industry and agriculture shall be subjected to destructive foreign competition;

(2) That the flexible provisions of the tariff act be maintained, embodying a basic controlling formula, laid down by the Congress, according to which shall be determined the adequate protective level at which individual tariff rates shall be set; and

(3) That, through a Tariff Adjustment Board or other instrumentality, and in advance of such board making its recommendations to the President, there be full opportunity for American businesses, likely to be affected by contemplated reciprocal tariff or other tariff changes, to present testimony as to the incidence upon their respective enterprises of such changes.

Finally, may I say that the above-expressed attitude on this bill is not one of antagonism; rather is it one of a desire to put forward some suggestions which in our opinion would make the proposal more in keeping with reasonable coordination of our national and our international interests.

California Mineral Production

WALTER W. BRADLEY, State Mineralogist, announces that Bulletin 109 of the California State Division of Mines is just off the press and ready for distribution. The title of Bulletin 109 is, "California Mineral Production and Directory of Mineral Producers for 1932." This bulletin is one of the series of annual statistical reports which have been issued for many years. It contains detailed data covering the amount and value of metallic and nonmetallic minerals, subdivided as to fuels, metals, structural materials, industrial materials, and salines, both by substances and by counties. A directory of all producers (except for natural gas and petroleum), which adds much to its value, is included. The properties and uses of the more than 50 mineral substances produced are treated briefly, the whole comprising a condensed compendium of information on the commercial minerals of the State.

HIGHLIGHTS of the Coming COAL CONVENTION and EXPOSITION

THE adoption of the seven-hour day, the five-day week, and the $5 wage scale in the coal mining industry only emphasizes the interest of the coal operator in the coming convention and exposition to be held at Cincinnati, Ohio, May 7-11, 1934. The convention is sponsored by the Coal Division of The American Mining Congress, of which R. L. Ireland, Jr., vice president, Hanna Coal Company, is national chairman, and is being developed and directed by a nationwide committee headed by C. M. Lingle, vice president, The Buckeye Coal Company, as national chairman.

The committee has been working diligently and has practically completed a program which is one of the finest ever presented at one of these conventions. It comprises some 39 papers, each devoted to a practical operating problem of timely interest. These papers are to be presented by a group of eminently competent operators and include such topics as: A Review of Mechanized Mining; A Review of the Results Obtained from Wet and Dry Processes of Cleaning; Research Along Utilization Lines; Costs as Related to Mining; Scouring Device to Clean Coal; A Review of Various Successful Methods of Roof Control; Efficient Haulage Systems; Drilling and Blasting Practice; Power Distribution and Use; Various Special Methods of Cleaning, involving papers on many individual systems; all phases of Safety, including a paper on the Effect of the Code on Discipline; The Mining Company Town, with a series of special photographs showing various towns; Competitive Fuels; Dedusting; Coal Sampling; Air Shooting; Shaking Conveyors; Pit Car Capacity and Mechanical Loading; Ventilation; Strip Problems; Mounted Cutting Machines; Problems of Multiple Shifting; Cleaning Small Sizes; New Things in the Equipment Field; and many others not yet definitely arranged for.

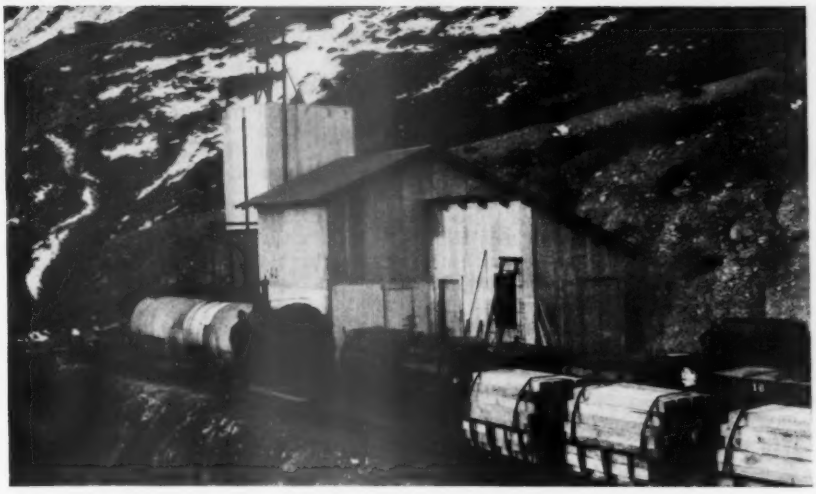
The convention has received the wholehearted support of the operators throughout the industry. Many companies have advised the management of their intention to be represented with large delegations. The industry is face to face with the problem of increased production costs, and it is intent upon finding ways and means of living within the code.

Never before at Cincinnati has there been such a spirit of cooperation. These conventions have been held consecutively at this point for nine years, but the tenth annual meeting went to Pittsburgh, which city outdid itself in a welcome about which the industry is still talking. Cincinnati, not to be outdone, is planning events and cooperation that will convince coal men that this should be the "City of Their Hearts." The Cincinnati Coal Exchange, Mr. Chaplin, chairman, is arranging golf privileges and special reception committees. They also are arranging for a special trip to the fuel utilization plant of the Union Gas and Electric Company. Very special entertainment for the visiting ladies is being arranged by Mrs. A. E. Bendelari, wife of the president of the Eagle-Picher Lead Company, who also is a director of The American Mining Congress.

The exposition is an outstanding success. This exposition is sponsored by the Manufacturers Section of the Coal Division, composed of 47 of the leading mining machinery and supply manufacturers. Already more than 80 percent of the available space is under contract, and the list of exhibitors is a catalog of famous names in the industry. Particularly, the so-called "capital charge" group will be represented with large space and marvelous exhibits. Among these are the Jeffrey Manufacturing Company with 2,000 sq. ft. of space; the Sullivan Machinery with 1,400 sq. ft. of space; the Joy Mfg. Company with 600 sq. ft.; the Goodman Manufacturing Company with 800 sq. ft.; the Myers Whaley Company with 300 sq. ft.; the Westinghouse Electric & Manufacturing Co. with 600 sq. ft.; and the General Electric Company with 800 sq. ft. The United States Steel group, including the Carnegie Steel Co., will utilize some 1,000 sq. ft., with the Ohio Brass Company, the Timken Roller Bearing Company, Roberts & Schaefer Company, the Enterprise Wheel & Car Corporation, the National Carbon Company, the New Departure Company, the Sanford Day Iron Works, and the Mine Safety Appliances Company occupying space varying from 200 to 400 sq. ft. The Safety Mining Company will display their new air shell and will utilize 500 sq. ft. of space. In all, at this writing (March 30), there are some 83 companies taking approximately 22,000 sq. ft. of floor space.

Everything would indicate that the convention and exposition will be the greatest since those of 1929 and 1930, which set records for attendance and sale of floor space. John J. Ryan, vice president, The Mine Safety Appliances Company, Pittsburgh, is national chairman of the Board of Governors of the Manufacturers Section sponsoring the exposition. C. B. Officer, of the Sullivan Machinery Company; G. R. Delamater, of the W. S. Tyler Company; and B. C. Shotten, of the Hendrick Manu-

(*Concluded on page* 20)



Timber Treating Operations at the United Verde Mine, Jerome, Ariz.

By C. E. MILLS *

THE advantages of timber preservatives for permanent work in mining operations are well established but is often difficult to prove the economics or limits to which treated timber should be used.

The United Verde mine is well ventilated and no excessive timber decay is experienced in the main gangways or sill workings. At present the 500 Level main service tunnel is being retimbered for the first time since 1919 and most of the decay is at the framed joints.

In pillar mining particularly in removing floor pillars, a period as long as five to ten years sometimes elapses before a stope is completed. In the past rotted flooring has often given trouble when coming up underneath the waste-filled stopes above.

Stringers supporting chutes and manways in the stopes are difficult to replace and treated timber is particularly desirable where the silling is started on the fourth floor or 24 feet above the level. Permanent chute pockets, such as waste transfer raises or shaft transfer raises unless constructed of steel and concrete should be built of treated timber.

It is also desirable to treat shaft guides—particularly the bolt holes before the guides are installed. In mining operations of any size there are innumerable jobs where treated timber should be used and this need had been felt at the United Verde for several years prior to the actual construction of a timber treating plant.

Selection of Treatment Method:

Although the open tank method of impregnating timber is advantageous in small operations, it is impossible to secure a satisfactory penetration particularly with green timber. In designing a plant at the United Verde the amount of timber used justified the necessary expenditure to construct a treater of the pressure type.

Several preservatives were considered including Wolman Salts, Ac-Zol and zinc chloride. Zinc chloride was chosen because of its lower cost and because very few places in the mine are sufficiently wet to wash out the soluble zinc salts. Ac-Zol, however, is used for painting framed ends of timber when necessary to shorten posts in placing gangway sets. It has also been used on shaft guides particularly on the framed joints and counter-sunk bolt holes.

Description of Plant:

The plant, at the United Verde, was completed in May, 1929, at a total cost of $12,184. It was designed and constructed by the mechanical department for the purpose of treating 1,000,000 board feet of mine timber annually by the zinc chloride pressure method.

The retort is 5 feet 6 inches inside diameter by 32 feet long, and was furnished by the J. P. Devine Co., of Buffalo, N. Y. The vacuum pump is an Ingersoll-Rand 10 inches by 5 inches, Imperial Type 15, vertical, double acting, belt driven unit, provided with moisture trap. A small 5¼ by 3½ by 5 inch air operated duplex pump is used to maintain 175 pounds pressure in the retort and handle the solutions from the mixing tank to the storage tank.

The operating crew consists of one operator and two laborers who load and unload the timber and help in charging the retort. The average charge is 3,700 board feet, loaded on specially designed cars, and handled from the storage yard to the treater by a storage battery locomotive, which also serves the lumber yard.

The fused zinc chloride is received in 1,100-pound drums, broken up and made into a 50 percent solution in a concrete

* Mine Superintendent.

vat 4 by 5 by 3 feet deep. From here it is delivered by an air injector to a mixing tank 8 feet in diameter by 6 feet in height, where it is diluted to a 3 percent solution. A system of valves permits the duplex pump to deliver the 3 percent solution to the main storage tank as needed. The 5,000-gallon storage tank is 11 feet in diameter by 9 feet high, and is elevated 12 feet to allow a gravity feed to the retort. The measuring tank is 4 feet 6 inches in diameter and has a capacity of 1,200 gallons. The top is open and the volume used indicated by a float and scale.

The operation varies little from the usual methods. After the timber trucks are loaded, a tabulation is filled in showing the various classes of timber, the total board feet, and gallons of solution calculated to give a ¾-inch penetration on heavy timbers and ⅜ inch on mine lagging and flooring. The charge is then subjected to a 30-minute vacuum period, and the solution then run in from the elevated storage tank, making use of the vacuum and gravity feed. The measuring tank is also filled by gravity and the pump started, drawing from the measuring tank and maintaining a pressure between 160 and 180 pounds in the retort by use of an automatic air control valve on the pump. The retort is equipped with 320 linear feet of 2-inch steam line, and the solution heated by low pressure steam from the mine shop's heating plant.

The pressure period is maintained until the required number of gallons are injected into the timber, providing this volume is taken up within a 3-hour period. The pressure period is limited to three hours, even though the desired penetration is not secured. The total gallons used from the measuring tank is then recorded and the retort emptied back into the storage tank by compressed air. A 30-minute vacuum period is then applied, and the kick-back pumped back into the measuring tank by the duplex pump.

Under ordinary conditions one charge is handled in an 8-hour shift, although it is possible to put through three charges in two days by one man working overtime.

Data on the costs and operation over a six-months period is given in the following tabulation:

Average bd. ft. treated per month	96,440
$ZnCl_2$ per bd. ft.	0.0508 lbs.
Operating costs per M bd. ft.:	
Labor	$3.980
Power	0.020
Steam	1.349
$ZnCl_2$ ($5.34 per cwt)	2.710
Miscellaneous supplies	0.394
Repairs	0.547
Total	$9.000

Use of Timber:

During 1929 the timber consumption at the United Verde totaled 8,700,000 board feet, the greater portion being used in the underground mining operations. Of this 882,600 board feet were treated.

The total timber used was roughly divided as follows:

47.3% Lagging 2 inches, 3 inches and 4 inches ranging from 5 feet 4 inches to 10 feet 8 inches in length used as flooring, fencing and chute lining. Practically all of this was native pine although a small amount of Oregon pine flooring was tried.

20.9% Native pine square sets for square set stoping.

24.1% Oregon pine 3 inches by 10 inches up to 12 inches by 12 inches used for all gangway timbers, bulkheads, chute pockets, etc.

7.2% Native pine cribbing for ore passes and manways.

0.5% Cedar for special work.

Treated Timber:

The following regulations pertained to the use of treated timber during 1929 and 1930 and its use will be resumed at such a time as underground mining operations are again started.

> Labor cost of installation must be added to both untreated lumber and treated lumber.
>
> For every dollar spent for lumber, there must be added from one to ten dollars for labor installation.
>
> Therefore, the cost in place is the real starting point in figuring maintenance cost.

1. All fencing, including 6 inches by 8 inches by 8 feet posts and 7 feet 2 inches fence lagging.
2. All stope floors laid on ore in place that will be mined out at some future time. This includes 4 inch by 12 inch sills, 10 feet 8 inches lagging and some 5 feet 4 inches lagging.
3. Stringers over chute raises for starting of post or cribbed chutes.
4. Cribbing in any raise which is to be used as a permanent manway and not stripped.
5. Gangway timbers in poorly ventilated or hot drifts.
6. Chute pockets in poorly ventilated openings—such as dead end drifts—shaft and waste transfer pockets.
7. All framed sets in main haulage ways or adits that have an expected life of five years or more.

Results of Using Treated Timber:

During 1929 and 1930 approximately 1,300,000 board feet of timber was treated for underground use. Off hand it would appear that this amount of treated timber would offer conclusive proof and innumerable examples of the merits of treated timber over untreated. About 65 percent of this treated timber has been used in fencing vertical pillars and flooring on ore remaining in sill pillars. The value of treated timbers for this particular use will not be apparent for several years or until these pillars are mined.

With good ventilation there are few places in the mine where untreated timber does not last 5 to 10 years so that in main passage ways—the treated timber has not been in sufficient length of time to give any direct comparisons.

In one inclined timbered manway from the 1,000 to the 500 level, located at a distance from the main orebody the air was humid, the volume inadequate. Native pine cribbing lasted three years. The upper section was particularly bad and the fungus growth quite rapid. This upper portion of the raise was replaced with cedar in 1926 and now shows decay to a depth of one-quarter to one-half inch. The lower section was replaced in 1929 with treated native pine and at present shows no sign of deterioration. Oregon pine stringers and chute pockets in this development raise also required replacing every four to five years. Treated Oregon pine replacements have showed no signs of decay in the past four years.

Conclusions:

The cost of treating with zinc chloride adds approximately 30 percent to the cost of the timber so that a good deal of supervision is required to insure the use of treated timber only where it is necessary and to see that raw timber is not used where conditions require the use of treated timber.

In main openings, such as timbered gangways, winzes or shafts there is no question about the economy of using treated timber. On the other hand a large portion of the treated timber used in 1929 and 1930 are in places where conclusive proof of its merits will not be available for several years. Whether or not the United Verde has gone too far in the use of treated timber is still an open question.

Convention and Exposition

(*Continued from page* 18)

facturing Company, are vice chairmen. A special committee composed of Roy L. Cox, of the Jeffrey Manufacturing Company; Frank E. Mueller, of Roberts & Schaefer Company; and C. B. Officer, of the Sullivan Machinery Company, are cooperating in the sale of space.

The industry is depending upon this convention and exposition to present all of those things that will aid in its time of need, and it is quite apparent that those who attend, in whatever capacity, will not be disappointed.

Ironing Out Kinks in Mechanical Mining

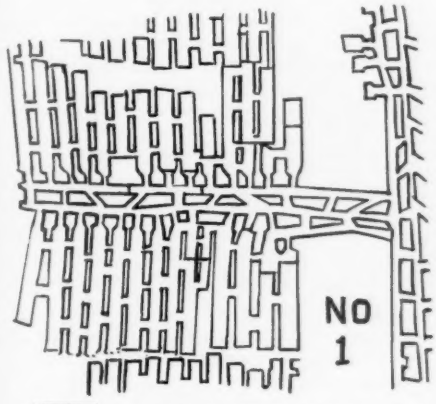
By E. J. CHRISTY *

MANY "kinks" confront a mechanical mining operation that must be ironed out in a brief period, very often, if progress is to be made in a mechanization program.

One of the first problems that confronts a mechanized operation is the lack of knowledge of the practical application of the equipment. We visit various operations which have similar conditions and observe the preparation, loading, and transportation; then study our own conditions and select the equipment which we consider the best adapted to accomplish our plan of mechanical mining which usually is the plan previously used in hand mining. This plan was followed in our own mechanical operation with the first loading machine starting in a section which was developed by hand loading to a point at the fourth room on a pair of butt entries which extended only a length of 14 rooms.

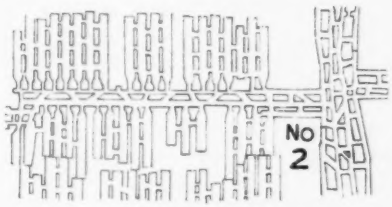
This pair of entries was developed and rooms worked with the mechanical unit; working rooms advancing on one entry, and retreating on the other entry.

This was our first "kink" in mechanical mining as there was not sufficient productive tonnage to justify the development through the 150-foot barrier pillars as shown on Sketch No. 1. Sketch No. 2 shows the second plan. Sketch No. 3 shows the third plan put in operation and the one being used at the present time.



In Plan No. 1 the equipment comprising one unit, worked single shift from June, 1925, to January, 1927. When Plan No. 2, differing from Plan No. 1 only in length of entries, was started and the second mechanical unit added, each working on a separate pair of entries continuing single shift operation until April 1, 1927.

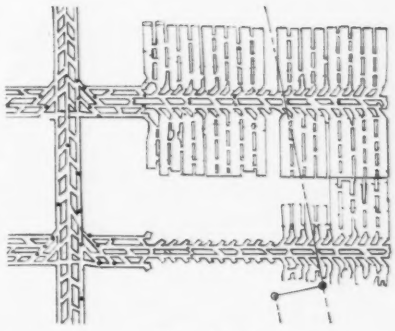
On March 1, 1928, we started the installation of seven (7) additional units in a one-hundred percent (100%) mechanical operation, having learned from our experience that single shift, lack of concentration in both mining and transportation in Plan No. 1 and No. 2, was a "kink" that had to be ironed out.



Plan No. 3 was put in operation working one unit double shift in one pair of butt entries, developing entries and room necks to a depth of 24 feet and is called a development unit.

In this plan concentrated transportation was accomplished by developing a loaded and empty track on each butt entry to be used by two production units working double shift. Each unit having their individual entry, empty and loaded tracks. Both units receiving service from the haulage motor at the same time.

Lubrication. In starting a mechanical operation, one of the "kinks" to iron out is an adequate and effective lubrication system. In our operation we tried using high pressure hand guns for all



Plan No. 3

bearings, one barrel of grease and one barrel of oil was kept on each loading section; oil and grease drawn out in five-gallon cans taken to the loading machine where it was put into the compartments by a hand squirt gun. This proved to be ineffective and wasteful to say nothing of the greasy condition of the loading machine and cables which deteriorated very fast from the grease coming in contact with the rubber.

We had an idea of a certain type of lubricating equipment which was not to be found on the market. We, therefore, decided to assemble, of our own design, a semi-automatic lubricating machine which carries one tank of grease, one tank of hydraulic oil, an air compressor and one large high-pressure grease compressor; all mounted on a standard mine car, bottom equipped with anti-friction bearings. This equipment was described in detail in a paper by Mr. A. J. Ruffini, presented at the American Mining Congress meeting, May 12, 1931.

Previous to the use of this system it was necessary to send a mechanic with the greasers to open up orifices in order to get lubrication to the bearings. This has not been necessary since the semi-automatic lubricating equipment was put in service January, 1930.

Working double shift on a tonnage basis in the same rooms and entries, pre-

* Consulting Engineer, Wheeling Township Coal Mining Co.

sented a "kink" which had to be ironed out. We found it very difficult to have the various operations left by one shift in a condition that the next shift following could go into normal production at the beginning of the shift. It was decided that some method had to be put in effect that would call to the attention of all employes as to how each particular part of the operation is to be performed. The method adopted was what we term a "Standard Practice sheet" which specifies the subject, duties and upon whom the responsibility is placed. When a "Standard Practice" is issued or changed, a copy is posted on the various bulletin boards and a copy given to each foreman in all departments to be placed in his "Standard Practice" binder for future reference. For example, No. 4 is a copy of "Standard Practice" on wide (production) unit leaves or condition in which each production section must be left at end of each shift.

Maintenance of mechanical equipment working on a tonnage basis, double shift, is a "kink" that is not always simple to iron out as we learned when equipment began wear and required repairs. In servicing the nine (9) units, double shift, the inside electrician is in charge of six mechanics that handle all inside repairs by placing two mechanics on each of three eight-hour shifts.

The mine operating shifts are 7.30 a. m. to 4 p. m. and 7.30 p. m. to 4 a. m. Mechanics' shifts are—first shift 9 a. m. to 5.30 p. m. Second shift 4. p. m. to 12.30 a. m. Third shift 12.30 a. m. to 9 a. m. It will be noticed that at the end of the day shift, second shift overlaps 1½ hours which is for the purpose of having the foreman and four men on mechanical and electrical inspection and maintenance, immediately at the end of the day shift.

Small storerooms are kept at advantageous points in the mine with necessary supplies which are used frequently. The part taken from the inside storeroom is ordered in from the main outside storeroom, charge being made to the particular piece of equipment using the part taken from the inside storeroom. All major repairs or rebuilding of equipment is done in a general repair shop on the outside of the mine.

We feel that ironing out "kinks" is made simpler by the labor incentive system adopted at our operation, and the one that we feel is the least complicated and, therefore, easily understood by the men. It is the old straight piece work or perhaps better known as tonnage rate. The mechanical loading, as worked at our operation, has added the group system. Under this system, a group of men are assigned to a section together with all of the necessary tools and machinery for the extraction of coal. This group performs all operations with the exception of laying the switches. Each man in the group is paid a fixed rate per ton depending upon the type of work he does, and his earnings depend on the tons loaded by the loading machine. In this kind of a set-up, the workmen perform their task as per standard set, for these standards allow the loading machine to load maximum tonnage. If the man slights his work, he not only reduces his earnings, but the earnings of the balance of the group. There is very little hesitancy on the part of the men to inform any man that he is not performing his work according to standards.

The group incentive system also makes for very little idle time for if the man has finished his work, it is to his benefit to help wherever possible. This condition does not arise in a very large degree since the task set for each man in the group has been accurately set by time study analysis. All this really does not differ much from the old hand loading method, for in that method men were also paid a price per ton and more tonnage meant more earnings. The big difference between the two is that mechanical loading has united the men on the section into a group working for a common cause.

Now there is one thing I haven't in the paper here from which we felt we got a great deal of good. We decided on a plan of what we called "training school." We asked the operators and helpers on the loading equipment or, in fact, anyone who cared to attend to spend one hour in the evening—the day shift to remain one hour in the evening at quitting time and the night shift to come one hour early—and the foreman of the shop had the unit torn down so that he could readily assemble it. That was placed on a table and the parties interested were grouped around in a circle, and the unit was assembled in front of them and then placed in the machine beginning at the bottom. Then they were shown how the operation of a lever on the outside of a machine, which they were familiar with, functioned or performed on the inside of the machine. This was carried on over a period of three months until we had the machine, from the caterpillar to the top conveyor, completely rebuilt. The purpose was to try to familiarize the operators and helpers with their machines so that when they called a mechanic possibly they knew as much about it as he did and could tell in intelligent language what the trouble was, which went a great way towards solving our maintenance problem and also towards the proper handling of equipment.

STANDARD PRACTICE SHEET

DELIVER TO

All Production Foremen.

DENA, OHIO DATE 11/18/29.

WHEELING TOWNSHIP COAL MINING CO.

SUBJECT WIDE UNIT LEAVES.

1. Cutters must leave at least one wide cut or at least two narrow cuts.
2. Shotfirer must leave at least one wide cut, with center shot and ribs tamped. With foreman's permission, this may be changed to one wide cut completely tamped ready to be shot.
3. Track must be advanced during shift in all places except the last place Loader was in.
4. Posts, including safety posts, must be set in all places where coal has been taken out on that shift.
5. Stonemen must have at least two wide places cleaned up or one wide and two narrow.

APPROVALS

Office	Engineering Dept.	Mine Foreman	Manager
Chief Electrician	Efficiency Dir. A J Ruffini	Foreman	Superintendent W F Hazen
Loader Supervisor	Master Mechanic	Outside Foreman	Consulting Engineer E J Christy

Form E2-2-30-500-1000-1000

OPERATING COAL MINES WITHOUT ACCIDENTS

By D. HARRINGTON * and W. J. FENE †

COAL mines and mining, as well as metal and nonmetallic mines and mining, are not inherently unsafe, although mining people think they are and would like to have everyone else think so. It is now being demonstrated that mines can be operated with essentially as much safety as any other major industrial enterprise; but most mining people, including workers as well as officials, have been slow to realize or admit this.

In the past, and with most people even at present, the idea has prevailed that it is utterly impossible to operate a mine without accidents. Although, as in all other kinds of industrial activity, it is true that some injury is likely on occasion to occur to some workers and an extraordinary accident may occur to one or more persons under exceptional conditions, mines can be operated with few if any accidents if a reasonable amount of the right kind of precautionary effort is exerted and kept in effect.

After publication of a considerable amount of well-authenticated data indicating that cement plants, some with large numbers of workers, operated nearly full time for a year or more without a lost-time accident and that underground iron-ore mines were also operating for months, many of them for a year or more, without a lost-time accident, a few coal mines began to discard the tradition that accidents absolutely must occur in the mining of coal and began to consider accident occurrence in terms of no lost-time accidents for a month or thereabouts rather than to confine activities entirely to prevention of fatalities. It was not, however, until within the past few years that coal mines actually attempted to operate as long as a year without a lost-time accident or came forward with records well supported by evidence that coal mines with a fair complement of workers and producing reasonably heavy tonnage could be worked for weeks or months or even for a year or more without a lost-time accident.

In 1923 the Portland Cement Association, trying to decrease accident occurrence in its 100 or more plants, including quarries and in some instances underground mines, offered a trophy to any entire plant in the association that would burn clinkers more than six months and operate through an entire year—January 1 to December 31, inclusive—without a lost-time accident. Those who formulated the offer were of the opinion that no plant could possibly operate through an entire year without a lost-time accident, but it was expected that in trying to achieve this very difficult goal there would be at least an approach to it and in the effort accidents with their manifold miseries and heavy costs would at least be reduced.

During the first year, 1923, no plant was able to operate without a lost-time accident, although a trophy was given to the plant with the best accident record; but the next year one plant won the trophy, the third year two plants won, and each succeeding year greater numbers won until 1931 when 42 plants of 122 in the contest worked through the year without a lost-time accident and 36 won trophies, the other six not having operated sufficiently to qualify for receiving a trophy. Hence what was considered an utter impossibility for any cement plant when the safety campaign was started in 1923 was actually accomplished by more than one-third of all the plants in the contest in 1931.

By the end of 1932, 12 plants had operated more than 1,000 days each without a lost-time accident and two of them—The Iola Plant, Lehigh Portland Cement Co., Iola, Kans., and the Ironton, Ohio, plant of the Alpha Portland Cement Co.—had each worked six consecutive years without a lost-time accident. Moreover, one cement plant by the end of 1932 had worked an underground mine for more than six years without a lost-time accident, and in that period the mine had been in actual operation for more than 1,000 days and had averaged over 1,000 tons of rock produced per day of operation.

Iron-ore mines in the Lake Superior region, as well as some of the lead-zinc properties of the Tri-State district near Picher, Okla., started several years ago to show that mines—both open-pit and underground operations—could be worked long periods, not only without fatal or serious accidents but even without occurrence of lost-time accidents or any accident that would not allow the victim to return to his regular work on the following day.

Although unquestionably the majority of those engaged in both coal mining and metal mining still cling to the idea that accidents of nearly all kinds, including fatalities and occasionally a multiple accident or disaster, are sure to happen as long as mining is done; on the other hand, it is decidedly encouraging to note the number of progressive coal, metal, and nonmetal companies now handling accident-prevention activities along the line of operating long periods without lost-time accidents and feeling—virtually knowing—that with the proper procedure mines can be operated without accidents.

Most coal mines, however, have continued to be operated in the belief (in which practically every one in the industry participated or participates) that coal mining is so inherently hazardous that not only serious accidents (including permanent partial or permanent total disabilities) but fatalities as well must occur as long as mining is done; that every coal mine should expect one or more fatalities per year; and that the coal mine which escaped disasters,

* Chief, health and safety branch, U. S. Bureau of Mines, Washington, D. C.
† Associate mining engineer, safety division, U. S. Bureau of Mines, Pittsburgh Experiment Station, Pittsburgh, Pa.

such as fires or explosions, with multiple loss of life, could count itself exceptionally fortunate.

The success or failure of the safety movement depends to a great extent upon the attitude taken by the individual company through its operating executives. Safety in coal mining can only be brought about by unity of mind and purpose of the managing officials and the employes. Proof that coal mining can be conducted without accidents is shown by the experience of 12 individual companies who have operated their mines one to two years without lost-time accidents. Table 1 shows a record of mines that have operated one year or more without a lost-time accident; there may be other mines that have equally as good records as those listed, but their records are not available. It is shown that three mines operated well over 500,000 man-hours without a lost-time accident and that four mines operated over 250,000 hours. Certain mines were continuing to operate without lost-time accidents after the end of the period shown.

The Alloy mine of the Electro-Metallurgical Co. at Alloy, W. Va., operated without a lost-time accident for nearly two full years—March 14, 1931 to March 1, 1933—with a production of 234,977 tons of coal, a total of 541,185 man-hours worked by an average of 130 employes.

This is one of the best coal-mining safety records available from the viewpoint of long-time operation and man-hours of exposure without a lost-time accident.

The Electro-Metallurgical Co. is a subsidiary of the Union Carbide Co., New York. The Alloy mine is operating in the No. 2 gas coal bed, which averages about 4 feet in thickness. The mine is developed by drifts, with the room-and-pillar system of mining, and is more or less in its development stage; it is rated as nongassy. The roof is exceptionally weak over the greater part of the mine and requires heavy and careful timbering. Haulage is mechanical; all coal is undercut and blasted with permissible explosives, and loading is by hand.

The Dehue mine of the Youngstown Mines Corporation at Dehue, W. Va., operated 602 days without a lost-time accident from January 7, 1931 to August 31, 1932, with an average of 214 men working 531,382 man-hours and producing 356,805 tons of coal.

The mine has consistently maintained a good safety record for a number of years, and the record above is one of the best known from the standpoint of the number of man-hours of exposure and tons of coal produced without a lost-time accident. This mine was awarded certificates of honor by the Joseph A. Holmes Safety Association for meritorious safety records during 1932 and 1933.

The Youngstown Mines Corporation is a subsidiary of the Youngstown Sheet & Tube Co. The Dehue mine is operated through two shafts and two slopes in the Eagle coal bed, which averages about 5 ft. in thickness. Development consists of two multiple systems of headings—one of 8 parallel entries and the other of 12. The room-and-pillar method of mining is employed, with pillars recovered on the retreat by machine methods. The roof is fairly good. The mine is classed as gassy; closed lights and permissible explosives are used, and the mine is thoroughly rock-dusted. Haulage is mechanical, and all coal is undercut and loaded by hand.

The Imboden mine of the Stonega Coke & Coal Co., Imboden, W. Va., operated without a lost-time accident from March 20, 1931, to July 8, 1932, or 475 calendar days, with a production of 231,469 tons of coal and a total of 509,232 man-hours of exposure by an average of 198 employes.

The Imboden mine has made remarkable progress in safety by adopting modern safety measures. Two fatalities have occurred since July 18, 1929, with well over 2,000,000 man-hours' exposure.

This is a drift mine operating in the Imboden coal bed, which averages 5 ft. in thickness and is worked by the room-and-pillar method of mining. Pillars are recovered on the retreat by the open-end method. The immediate roof is a weak slate and requires much timbering. Haulage is mechanical. The mine is rated as nongassy. The coal is center-cut and loaded by hand.

The Brier Hill mine of the Buckeye Coal Co., Pine Hill, Pa., operated from December 10, 1930, to December 11, 1931, without a fatality or a disability exceeding the day of the injury, with a production of 184,306 tons of coal by an average of 257 men for a total of 343,363 man-hours.

The mine, operated through a shaft 654 ft. deep, is working the Pittsburgh coal bed, which averages 84 in. in thickness. The advance work was by the room-and-pillar method, but all work at present is retreating, mining, pillars, and stumps. The mine is rated as gassy, and fire bosses are employed. The mine is rock-dusted. Haulage is by trolley locomotives and animals. The roof is bad, and considerable timbering, including forepoling in some places, is necessary. All coal is undercut and loaded by hand. This property is a subsidiary of the Youngstown Sheet & Tube Co., which also is understood to control the Dehue mine.

The Dawson No. 1 mine of the Phelps-Dodge Corporation, Dawson, N. Mex., worked the entire year 1931 without a lost-time accident. During this period 70 underground employes worked 12,905 man-hour shifts and produced 68,237 tons of coal. During 1930 this mine had only four lost-time accidents and has a record of 445 consecutive days worked with no lost-time accidents.

Mine No. 1 is opened by a drift and is working the Blossburg coal bed, which averages 6 ft. in thickness. The production is largely from pillar extraction with exceptionally bad roof conditions. The mine is extremely dry, being in a semi-arid country and at an elevation of 6,500 ft. It is thoroughly rock-dusted, and face regions and broken coal are thoroughly wetted. The mine is rated as gassy. Permissible explosives are used, and shots are fired from outside the mine. Coal is undercut, and loading is both mechanical and hand.

The Orenda mine of the Davis Coal & Coke Co., Boswell, Pa., operated without a lost-time accident from December 14, 1931, to January 31, 1933, a period of 13½ months, with an average of 180 men working 279,393 man-hours and producing 129,841 tons of coal.

The Orenda mine is opened by a slope into the C Prime coal bed, which averages 60 in. in thickness and has an average pitch upward of 10 percent. About 60 percent of the production was from pillar workings.

The Steubenville mine of the Consumers Mining Co., Steubenville, Ohio, operated without a lost-time accident during 744 days from January 4, 1931, to January 9, 1933, with an average of 84 men working 230,732 man-hours and producing 128,630 tons of coal.

The Steubenville mine is operated through a shaft into the Freeport No. 6 coal bed, which averages 3½ ft. in thickness. About 85 percent of the production was from pillar workings.

TABLE 1.—RECORD OF MINES THAT HAVE OPERATED ONE YEAR OR MORE WITHOUT A LOST-TIME ACCIDENT

Mine	*Operator*	*Place*	*Period, months*	*Men employed*	*Coal mined, tons*	*Exposure, man-hours*
Alloy	Electro-Metallurgical Co.	Alloy, W. Va.	23½	130	234,977	541,185
Dehue	Youngstown Mines Corporation	Dehue, W. Va.	20	214	356,805	531,382
Imboden	Stonega Coke & Coal Co.	Imboden, Va.	15½	198	231,469	509,232
Brier Hill	Buckeye Coal Co.	Brier Hill, Pa.	12	257	184,306	343,363
No. 1	Phelps-Dodge Corporation	Dawson, N. Mex.	12	70	68,237	12,905*
Orenda	Davis Coal & Coke Co.	Boswell, Pa.	13½	180	129,841	279,393
Steubenville	Consumers Mining Co.	Steubenville, Ohio	24	84	128,630	230,732
Hull	DeBardeleben Coal Corporation	Dora, Ala.	12†	160	100,699	301,763
Weyanoke	Weyanoke Coal & Coke Co.	Lowe, W. Va.	12	100	125,000	146,589
Mossboro	Black Diamond Coal Mining Co.	Mossboro, Ala.	15	50	44,436	144,925
No. 1	Block Coal & Coke Co.	Block, Tenn.	13	115	67,832	.....
Rockvale No. 3	Colorado Fuel & Iron Co.	Canon City, Colo.	12	60	41,154	.....

* Man-shifts.
† This record actually covered 11 months and 20 days in the calendar year 1930.

The Hull mine of the DeBardeleben Coal Corporation, Dora, Ala., operated 11 months and 20 days in 1930 without a lost-time accident, with an average of 16 men working 301,763 man-hours and producing 100,699 tons of coal; this mine also operated the first 11 months of 1929 with only two lost-time accidents and seven days lost.

The Hull mine is opened by a drift into the Mary Lee coal bed, which averages about 6½ ft. in thickness. The room-and-pillar method of mining is used, and pillars are recovered on the retreat. The mine is rated as nongassy.

The Weyanoke mine of the Weyanoke Coal & Coke Co., Lowe, W. Va., operated without a lost-time accident during 1932, with an average of 100 men working 146,589 man-hours in the production of 125,000 tons of coal.

The Weyanoke mine is opened by a drift into the Pocahontas No. 3 coal bed, which averages 56 in. in thickness.

The Mossboro mine of the Black Diamond Coal Mining Co., Mossboro, Ala., operated without a lost-time accident from October 1, 1931, to December 31, 1932, with 144,925 man-hours of exposure and a production of 44,436 tons of coal.

Table 2 shows the records of some mines that have operated for long periods with only few lost-time accidents. It is observed that the haulage employes of the American Rolling Mill Co. mine at Nellis, W. Va., operated for 43 months, or 144,831 man-hours, handling 1,080,733 tons of coal, without a lost-time accident. The employes of the coke works of the Stonega Coke & Coal Co., Stonega, Va., worked 37 months with 539,223 man-hours of exposure with only one lost-time accident. The records of the two anthracite mines shown in table 2 are remarkable in that the natural conditions present many more hazards than ordinarily found in bituminous mining.

A significant fact noted from the list of mines that have gone for long periods without lost-time accidents is that 33 percent of them are operated by companies that are subsidiaries of companies in other industries. This fact would indicate that essentially the same safety policies as are used in the other industries are effective when applied to coal mines.

It is of interest to know how the good safety records of these mines were attained. Virtually all these records were made possible only by acceptance of responsibility for accidents and accident occurrence by company executives, in the belief that accidents can be prevented. Some of the factors that entered into making these records possible are:

1. In most cases the executives of the company took a personal part in securing the sustained interest of all employes in safety measures, as they realized that safety in and around mines is largely a problem of mine management and mine safety organization.

2. Some type of safety organization was generally established, and all supervising officials were expected to take an active part. As a rule, meetings were held monthly, and in at least some cases all employes were required to attend. Accidents occurring at the mine were discussed at these regular meetings, and employes were encouraged to report hazards and dangerous practices observed by them. The safety education of the employes was accomplished largely through these meetings.

3. Safety rules and suggestions were transmitted to the employes through daily verbal instruction by the official.

4. Well-designed bulletin boards were in many instances placed at strategic locations for the instruction of employes.

5. Employes of several mining plants were given a rigid physical examination. New employes were examined and placed in positions for which they were best fitted, and prospective employes who could not meet the rigid requirements were not hired.

6. Rigid discipline was inaugurated and maintained. Carelessness by workmen or officials was not tolerated. Employes who persisted in using careless methods of working were usually discharged, while somewhat less severe penalties were applied to employes whose violation of safety rules or regulations appeared to be due to lack of information rather than to premeditation.

7. Usually wage scales were maintained at a level slightly above the prevalent scale of the district, and employes were given other evidences that the employer was attempting to "*play fair*" with them.

8. Friendly rivalry among employes was encouraged in some mines by the free distribution of small prizes to those on any section which had worked an entire month without a lost-time accident.

9. Safety was made an important factor in the scheme of production in essentially every mine which had these good safety records.

10. The safety engineer was an integral part of the management in at least some of the mines listed as having achieved eminence in safety performance.

11. All hazards were recognized as potential causes of accidents by several of these mines.

12. A definite program was placed in effect looking to the elimination of such hazards as could be removed from these mines; in other words, the good safety record was brought about by concerted, well-directed effort.

13. Printed rules were posted or issued in pamphlet form governing procedure in dealing with such hazards as could be eliminated; in this manner the employer acquainted the worker not only

(*Concluded on page* 34)

TABLE 2.—RECORDS OF SOME MINES OPERATED WITHOUT LOST-TIME ACCIDENTS

Mine	*Operator*	*Place*	*Period*	*Men employed*	*Coal mined, tons*	*Exposure, man-hours*	*Remarks*
Nellis	American Rolling Mill Co.	Nellis, W. Va.	43 mos.	...	1,080,733	144,831	Applies only to haulage employes. No lost-time accidents.
Hammond	Philadelphia & Reading Coal & Iron Co.	Girardville, Pa.	77 days	508	158,180	312,925	Gassy anthracite mine on pitches up to 65°.
No. 9	Rockhill Coal & Iron Co.	Wood, Pa.	329 days	251	154,000	416,000	Anthracite mine, 10 to 70° pitch. No lost-time accident.
Coke Works	Stonega Coke & Coal Co.	Stonega, Va.	37 mos.	...	{ Coke 203,711	539,223	One lost-time accident. No fatals for 14 years.
Beech Bottom	Windsor Power House Coal Co.	Windsor Heights, W. Va.	10 mos.	403	398,827	.....	No lost-time accidents.
Brookside	Philadelphia & Reading Coal & Iron Co.	Tower City, Pa.	3 mos.	1,000	144,451	.....	5 lost-time accidents.
Nellis	American Rolling Mill Co.	Nellis, W. Va.	7 mos.	300	176,750	.....	No lost-time accidents.
Empire	DeBardeleben Coal Corp.	Empire, Ala.	18 mos.	135	.....	.....	135 negro miners. No lost-time accidents.
No. 2	Utah Fuel Co.	Castle Gate, Utah	74 days	...	.....	.....	No lost-time accidents.
No. 3	Utah Fuel Co.	Castle Gate, Utah	200 days	30	.....	.....	No lost-time accidents.
Benoit	Black Diamond Coal Mining Co.	Benoit, Ala.	14½ mos.	100	74,987	235,770	1 lost-time accident.

The Mossboro mine is operated through a slope in the Buck coal bed, which averages 40 in. in thickness and dips 20° to 25°. The mine is rated as gassy, and rock-dusting and sprinkling are employed.

The No. 1 mine of the Block Coal & Coke Co., Block, Tenn., operated without a lost-time accident from May 26, 1931, to July 1, 1933, employing an average of 115 men in the production of 67,832 tons of coal.

The Block No. 1 mine is opened by a drift into the Dean coal bed, which averages 5 ft. in thickness.

The Rockvale No. 3 mine of the Colorado Fuel & Iron Co., Canon City, Colo., operated without a lost-time accident from June 22, 1931, to June 24, 1932, with a production of 41,154 tons of coal. This mine operated from June, 1904, to December 31, 1932, or 28½ years, without a fatality.

The Rockvale No. 3 mine is operating through a slope in the Canon coal bed, which is about 6 ft. thick.

Safety At Pickands, Mather and Company Iron Mines

By A. H. TRESTRAIL *

WHERE there is vision followed by consistent effort, there is achievement. Twenty-five years ago mining was acknowledged one of the most hazardous industries. The natural forces that man encountered in uncovering buried treasure were believed to be uncontrollable and not amenable to human effort. Some held that safety might be applied to shop or factory but when mining with safety was contemplated, the majority concerned were skeptical if not ready to ridicule. As every new movement has its pioneers, there were some mine operators who were convinced that safety could be applied to mining and were ready to take the initiative. Pickands, Mather and Company stood among these pioneers of safety who were possessed with the vision and the desire to carry out their convictions. Now, after a quarter century of consistently keeping the objective before them, they have every reason to believe their vision has been clear and their efforts toward safe operation have brought desirable results. It is true that experiences have been encountered which have been discouraging, yet results attained are such that we know safety pays in tangible assets while the misery which has unquestionably been avoided over this period of time will never be revealed by the balancing of any ledgers.

The conviction that safety is right first found expression in a sincere effort to guard all mechanical and conceivable hazardous physical conditions. This, while fundamental and elementary in any safety program, must be subscribed to by all who expect to have the cooperation of the entire organization. In order to bring mechanical equipment into conformity with the best conceptions of safety, much had to be changed and some

Entrance to the Shaft

equipment discarded. Mechanical guards were not available at first and "home made" guards were used. Today, however, practically all machinery comes from the manufacturers carrying the proper protection. Such hazards as were apparent were promptly cared for while those less apparent were remedied after experience had proven a hazard existed. As an illustration, when the first tugger hoists appeared, the revolving drums and winding cables looked quite innocent. When an employe lost the tip of his thumb trying to control the cable while operating the machine, it was realized that the cable must be guided and the drum enclosed. Later, it also became apparent that broken cables can do considerable damage to the operator of the tugger hoist and a guard was devised to prevent a broken slusher cable from flying back into the operator's face. These examples of developing protection at points of danger are typical of safety growth. While foresight is highly desirable in the prevention of injuries, no opportunity has been lost to profit promptly by such experiences.

A tour of inspection would reveal, from the time one left the change house until he returned, many devices designed to make employment safe and to keep safety uppermost in the workmen's minds.

Hoisting equipment for handling men into and out of mines is provided with the best known automatic controls. Thus, if for any unforeseen reason, the hoistman should become incapacitated, the hoist would come to a stop when it approached its destination. Rules provide that the hoistman must return all signals as received before he can move the hoist. This prevents hoisting accidents due to misunderstanding of signals.

Upon opening the self-closing gate which guards the entrance to the shaft, we step onto the cage. Our conductor closes the cage door and we are protected overhead and on all sides. We descend, possibly two thousand feet and step from the cage onto a well lighted level. While one carries a carbide lamp, he could in many of our mines dispense with it entirely due to electric lighting throughout the mine. All mines have levels and main travel ways electrically illuminated. Good light is a strong factor in the prevention of accidents.

As we proceed, we have little fear of a mis-step for all openings are guarded and ladderways are kept in good condition. Passage ways are kept clear from obstructions as cleanliness is recognized as having a definite bearing on safety. "Clothes may not make the man" nor good housekeeping the mine but good housekeeping does prevent stumbling, slipping and other injuries. It tones the employe's mental attitude which is the major factor in any worthwhile effort toward the reduction of injuries.

One would complete such a tour convinced that no efforts were being spared to guard every point where danger might exist. A similar survey of the open pits

* Range Safety Instructor.

operated by the company will also reveal that no effort is spared to make their physical conditions conform to the best safe practices.

There is considerable difference from a standpoint of comfort in the first hard hat or hard toe boot and those that are now used. Their effectiveness in the reduction of injuries was soon realized. They both met with opposition when first introduced but it did not take long to turn opposition into approval and today the hard hat is worn by all underground employes and hard toe boots are generally worn. Goggles are furnished for all work where danger exists from flying objects. Underground the screen type of goggle is most commonly used. Safety belts for employes have justified their use in more than one instance.

No safety program is complete after the guarding of hazards has been completed. The education of the employe and the cultivation of the proper attitude towards safely performing his work is a continuous process. To be sure the employe does not desire an accident but he has to be taught to take care of himself. Here the foreman and safety inspector find ample opportunity to make their contributions to the well being of the individual employe. This is not a concise series of "don'ts" delivered in one short lecture but must continue daily by precept and example. The foreman is held responsible for the safety of his employes and therefore it is he who must observe carefully the habits of his men and correct any unsafe practices.

Bulletin boards are maintained at all properties for the display of safety bulletins. The National Safety Council's bulletins are used, augmented by home made bulletins.

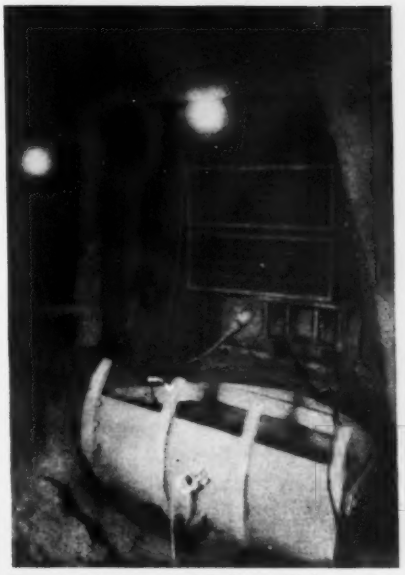
The general safety program is directed from the Cleveland office. On each of the ranges where the company operates is a range safety inspector. His chief responsibility is to interpret the company's policy in safety and he reports directly to the local operating official. Recommendations of the safety department are presented to the general superintendent and if approved by him must be carried out by the operating department. In other words, the actual execution of safety measures are a part of the mining program. A monthly summary of the department's activities is forwarded to the Cleveland office, the general manager and his immediate assistants.

Much has been written about the necessity of management's active interest and forceful participation in prosecuting safety work. A tree's value is best determined by the fruit it bears; management's sincerity can best be recognized in the results obtained from the safety program. If Pickands, Mather and Company felt that life and limb were not being saved, that there was not reason for more contentment in families, that both the earnings of employes and the company were not enhanced by this safety work, they would not have the conviction nor the courage to prosecute it with such vigilance as has been characteristic of their efforts. Recognizing safety as an integral part of efficient operation and its ability to serve the highest interest of employe and employer, they strive toward the goal which is the elimination of all accidents.

Shaft Protection at Underground Level Station

Raise Used as Ladder Way and for Timber

Interest has been maintained by many and varied forms of contests. Mine has been pitted against mine and mines have competed with their own records. Awards have been made to winners in district contests with each employe at the winning mine receiving a suitable prize. One of the most successful methods of increasing interest in safety was to reward employes for each month the mine went without a lost time accident. Some very fine records were made. Several mines operating with large crews of men were able to complete 12 months of continuous operation without a lost time accident and others made records of several years without a lost time accident.



Completely Guarded Trigger Hoist and a Guard to Prevent Broken Cables Flying Into Operator's Face

First aid and mine rescue training was introduced very early as a part of the safety plan.

Classes in first aid are held regularly at all properties. At many of these, 100 percent of employes have received this training and at all properties enough trained first aid men are maintained to care for any emergency injury that might arise. First aid primarily is a strong factor in cutting down disability which may follow an injury. It also has an influence in making the employe safety minded. Instruction in the treatment of imaginary injuries and discussion of the conditions under which they occur impresses on workmen the results of carelessness.

First aid contests between teams representing various mines have increased interest in first aid work and developed some exceptionally competent first aid men. The company has not only encouraged these contests on their operating ranges but have, on one occasion, sponsored an interrange company contest with teams representing the Mesaba, Gogebic and Menominee Ranges competing. The winners of this contest went to the national meet where they were awarded third place.

Trained crews in mine rescue are maintained at each mine and several complete rescue stations are maintained on each of the ranges where the company operates.

The Bureau of Mines has been decidedly helpful both in training first aid and mine rescue men and helping to arrange contests. They have also contributed valuable aid in the solving of other safety problems.

MINE FAN ECONOMY

By J. E. JONES*

SUCCESSFUL mine operation includes the application of as great a variety of scientific knowledge as does possibly any other type of industrial activity. Such knowledge embodies an equal amount to that required by any other industry on the face of the earth, but added to it is the need of artificially supplying underground those necessities taken as a matter of course on the surface. Chief among these is ventilation, and the chief single factor in ventilation is the mine fan.

Mechanical ventilation of mines is now wholly obtained with fans. There was a time when mechanical efforts in forcing the air down by the cylinder and piston principle were made, but these all disappeared with the advent of the fan. However, when one considers the fan as a set of cylinders and centripetal force as a piston to each cylinder, there is a connection of thought between the two.

There is probably no operating mechanism in or about a coal mine the principles of which are so little understood by the managements as those of the fan. The average management can intelligently direct any detail of any other department. With the fan, however, the limits of understanding are usually the mechanical maintenance and variation in speed. The fan is that piece of equipment which, above all others, the management accepts, bewildered as to its efficiency. The evolution of every bit of progress in and about a coal mine is at least partly attributable to the "men at the mines" with the exception of the fan. The fan designer is neither assisted nor bothered by the mining men in his study and efforts. They accept what he has to offer, their only demands being original cost and that the fan delivers the quantity of air desired.

There is probably, also, no other operating mechanism in or about a coal mine that operates with greater regularity and gives less trouble than the mine fan. Its efficiency, therefore, has been taken by the management as a matter of course. After installation it is all but forgotten, a maximum of attention being given elsewhere, in spite of the probability that the fan and the mine are no longer properly mated, perhaps were never so, and in spite of the fact that the fan probably uses one-fourth of the power used at the mine.

In the evolution of mine fans the tendency in recent years has been from the large slow-moving fans to the smaller and speedier ones. From historical data of the Illinois Mining Institute Proceedings of 1929 we find, "It was late in 1891 . . . that Mr. James C. Simpson, general manager of the Consolidated Coal Company, invited the state mining board and inspectors, and other mining men of the state, to visit one of the company's mines in Staunton, and to spend the day in mining discussion and good fellowship. The nucleus of the meeting was the inspection of the recently installed newest type mine fan. This was a Guibal type fan, 30 feet in diameter (for mines Nos. 8 and 9). At the dinner given by Mr. Simpson on that day, it was proposed that an institute be organized, and the date of February 17, 1892, was fixed for the preliminary organization." The Illinois state coal report for 1893 shows that this fan, running 62 revolutions per minute, water gauge of 2.2, and volume of 163,000 cubic feet per minute, was belt-driven by a pair of engines 18 inches by 36 inches. The same report states that mine No. 7 of the same company had a 20-foot fan giving 92,000 cubic feet per minute at 72 revolutions per minute and 1.4 inches of water gauge. It further states that the Pana Coal Company installed an 18-foot fan and notes that other fans of various sizes were installed in that fiscal year. In the six years ending 1893, fan installations in Illinois increased from 176 to 286. Another period of increased fan installation began 10 years later with the opening of the Franklin County coal field. With the exception of the 30-foot fan previously mentioned, there was no decided difference in the general sizes of fans installed, those in this most recently developed coal field ranging from 12 to 18 feet in diameter.

There has been much progress made in the design of fans. Available fan efficiency is far greater than has been generally realized. While the cost to change fans is considerable, it would pay the management of each mine to give greater consideration to the constant cost of fan operation for the full 24 hours per day, every day year after year, determining whether or not the cost of changing fans would be warranted.

In recent years there has been a decided change from steam to electricity as the drive for fans. While steam had a definite cost, this cost was not as evident as that for electric power, the latter being measured, paid for to some one else, and the cost definitely known. It is now realized more fully that a fan is a great consumer of energy, being the largest, if operated the entire 24 hours, of any other device in or at the mine. With this knowledge, made more startling because of the direct purchase of the power, there should be greater incentive to get the highest possible efficiency from fan operation.

The mine, in so far as ventilation is concerned, has a rather definite set of characteristics. The height of coal and other natural conditions are apt to remain nearly constant. The mine design including the number of passageways for air travel will probably remain constant. It is probable that no natural or artificial condition will arise to materially change the resistance, other than increased distances for the air to travel as the mine expands, presuming, of course, that air passages will be kept in average opened condition.

As with any combination of work to be done and the mechanism to do the work, the greatest job is to build into the mechanism the characteristics best fitted to do that work. This is true with automobiles, airplanes, and whatnot. With a fan this, of course, is the job for the designer of the fan. As stated

* Safety Engineer, Old Ben Coal Corp.

before, the fan and its characteristics are most elusive. However, they are subject to natural laws, the recent improved efficiency being nothing more than the result of a better understanding of those laws.

The fan designer needs to know the volume desired and the resulting pressure. He may ask if the mine will change rapidly in these requirements. Knowing the pressure and volume required, he can at once determine the energy in the air.

Efficiently operated fans are like automobiles or any other mechanical device in having an approach to correct balance between power input and work accomplished. An automobile designed to travel at 5 miles per hour and 80 miles per hour is inefficient as to the power input and work accomplished at such great variation. An automobile having an engine that operates the most efficiently at 40 miles per hour can be run with a fair degree of efficiency at a constant speed of 50 or 30 miles per hour, but if either 60 or 20 miles per hour is to be the constant speed, then it would be advisable to install the correct engine for that speed.

Similarly the correct size engine or motor can be installed, depending upon the work to be done by the fan. But, and here is where there is often confusion of ideas, any individual fan is just as efficient for the mine it ventilates irrespective of its speed. The highest efficiency of the fan depends upon two fundamental principles: First, the inherent qualities of the fan for efficient performance; and, second, how well the characteristics of the fan fit the characteristics of the mine.

It is not the purpose here to enter into a discussion of the theory of fan design. This is a problem for the fan engineer. It is the purpose, however, to call attention to the general apathetic attitude of the coal industry towards efficient fan performance. The chief faults are:

(1) The original attempt to obtain a fan to fit the mine was without full or correct knowledge of air volume and pressure data, resulting in a fan that was a misfit, usually having the wrong idea that a larger fan is required as the mine develops.

(2) The mine resistance has increased due to expansion to such extent that the fan is inefficient for the present mine, and will further decrease in efficiency as the mine continues to expand.

(3) Selecting a large expensive fan to operate efficiently during the temporary unstable period of a new mine rather than selecting a small inexpensive fan, the proper unit, to operate over the greater life of the mine when the operating requirements of the mine become more stabilized and the work to be done on the air becomes great. If a machine cannot be efficient all of the time, it is obviously preferable that the machine is allowed to be inefficient during the period that there is little work to be done rather than at that period when the amount of work to be done is great.

(4) Old fashioned plain bearings are in too prevalent use. There is not the same consideration given to this factor as in the case of other equipment.

(5) There is frequent loss of power between the motor and the fan. Constant speed motors stop loss of power in rheostats, short pulley centers and V belts lessen wind resistance and slippage losses.

As an example of the foregoing, a fan 16 feet by 5 feet, typical of the fans in general use in the southern Illinois coal field, in use at Mine No. 8 of the Old Ben Coal Corporation, was discarded in October, 1932, and a fan 8 feet by 4½ inches was placed in its stead. The comparative data follow:

	16′ x 5′ fan	8′ x 4½′ fan
Blades	Forward curve	Backward curve
Speed	123 r. p. m.	318 r. p. m.
Volume	113,856 cu. ft. per min.	117,300 cu. ft. per min.
Static pressure	3.56 in. of water	3.60 in of water
Overall unit efficiency ..	40.3%	78.1%

This change has resulted in a monthly saving of $552 in electric power cost.

The complete cost of this change, exclusive of motor and automatic starter, was $5,785.11. This cost divided by $552 (savings per month) equals 10⅓, which is the number of months that the saving in cost will pay for the complete installation. On the other hand, it takes considerable thought to scrap a $27,500 fan and drive installation.

When one considers that such a monthly cost has been paid for many years, all because of not having the proper ventilating unit installed, it is time to profit by that experience and prevent, if possible, recurrences.

Fan engineers agree that the fan with backward curved blades will prove more successful when applied to mine ventilation than the fan with forward curved blades. There are two principal reasons: First, a properly designed backward curve fan can be made to develop a higher mechanical efficiency than a properly designed forward curve fan; second, the backward curve fan is a more stable ventilating unit in that it will maintain its high efficiency over a wider range of varying underground mine conditions than a forward curve fan. The forward curve fan for a particular job will be smaller than a backward curve fan for the same job, due to the fact that the volumetric capacity of the forward type is higher than the backward type. However, the slight difference in initial cost is greatly outweighed by the higher operating mechanical efficiency of the backward curve fan. It must be borne in mind that it is mechanical efficiency that determines cost of operation and not volumetric capacity or manometric efficiency. The reason for this difference in mechanical efficiency in the two types of fan is that the backward curve fan, by virtue of its larger wheel volume, passes air through itself at a lower absolute velocity than does the smaller forward curve wheel. In both cases the total work done on the air manifests itself, almost completely, in the form of pressure energy as the air leaves the fan outlet. Since each fan must store in the air the same amount of total energy in order to overcome the mine resistance, it is obvious that it is necessary for the forward curve fan to perform a greater amount of conversion of kinetic energy to pressure energy than the backward curve fan. A student of aerodynamics is well aware of the fundamental fact that a fluid in motion, be it liquid or gaseous, when subjected to expansion undergoes the loss of a part of its energy due to "shock," which lost energy can not be recovered. It is, therefore, a corollary that the fan that has the least amount of this conversion to do can be made the most efficient fan,

(*Concluded on page* 31)

Mine	Daily tonnage	Present fan size	Proper fan size	Times too large	Present fan-motor input kw.	Possible percentage power reduction	Possible saving per year at 1½ cents per kw.h.	Approximate cost of new fan	Percent return in investment per year
A	6,000	16′ x5′	7.5′x3.75′	6.05	130.00	36.0	6,270.00	6,320.00	99.25
B	7,000	16 x5	9 x4.5	3.50	123.00	22.0	4,130.00	8,550.00	48.30
C	4,500	12 x5	7.5 x3.75	3.42	112.00	27.5	4,700.00	6,350.00	74.00
D	10,000	12 x5	9.5 x4.75	1.68	233.00	16.5	5,850.00	9,850.00	59.50
E	4,000	16 x5	6.5 x3.25	9.25	118.50	48.5	8,770.00	4,525.00	194.00
F	4,000	16 x6	7.5 x3.75	6.05	59.10	33.3	3,000.00	7,770.00	38.10
G	4,500	16 x5	9 x4.5	3.50	64.80	32.2	3,190.00	8,800.00	36.30
H	4,200	16 x5	9 x4.5	3.50	270.00	27.5	11,320.00	8,800.00	129.00
I	4,000	16.5 x8	7 x3.5	12.60	157.00	53.5	12,800.00	4,900.00	261.00
J	7,000	14 x5	9 x4.5	2.70	149.00	44.2	9,770.00	8,310.00	117.50
K	3,000	12 x4	5.5 x2.75	6.90	60.00	71.0	6,500.00	3,270.00	199.00
L	2,500	15 x5	6.5 x3.25	8.20	26.20	73.0	2,920.00	4,510.00	64.70
M	3,500	12 x4	7.5 x3.75	2.70	60.40	51.5	4,750.00	6,350.00	74.50
N	4,000	10 x5	8 x4	1.96	68.70	49.0	5,140.00	8,300.00	62.20
O	1,500	14.5 x5.84	3.5 x1.75	57.20	54.00	69.0	5,680.00	1,620.00	350.00
Avg.	.....	.....	.....	8.60	.....	43.5	.....	.....	120.00

Accident Prevention Practices

Of The

Utah Copper Company

By L. F. PETT* and J. G. HADLEY†

THE Utah Copper Company's safety program, with its varied activities, receives thorough consideration at all company plants. It is based on a desire of the management to accept responsibility for the vigorous prosecution of a progressive safety policy. The committee type of organization, with slight variations to meet plant operating conditions, has been adopted at the company's mines and mills. This plan provides for a safety director who is responsible for the safety activities, but the discipline and supervision is the duty of the foremen as a function of the operating departments.

The motivating force of this type of organization lies in the monthly safety meetings of all department heads with the superintendent as chairman. Department heads have a varying degree of susceptibility to safety suggestions, especially those suggestions touching operating practices of long standing. However, with the superintendent as chairman, company policies can be stated, safety suggestions made, accidents discussed, with the responsibility placed, and corrective measures adopted without creating ill will toward the safety department. If suggestions have the management's support they are easily enforced through and by means of the operating departments.

* Safety Director, Mines Plant.
† Safety Director, Mills Plant.

Such a program requires the continuous inspection of the operations and the active participation of the employes. Physical conditions make it necessary to reach the workmen at the mine in a different manner from that employed at the mills. Employes enter and leave the mine's 60 miles of levels and dumps at various points and workmen from each department are spread over the entire area making a common point of safety contact impracticable, while the compact surroundings at the mills provide an excellent arrangement for effective functioning of the committee plan. At the mine, the two field inspectors working in the safety department, reach the various man-machine operations in much the same manner as do the employe representatives of the mills' Safety Committee. The purpose of each is to incorporate into the safety program the valuable suggestions of the man on the job.

Each morning the safety department obtains for investigation cards of all men who during the previous day have received medical treatment for minor injuries. The department distributes posters of safety education; picture shows and ball games are also brought to the attention of the men in this manner, and first-aid supplies are liberally distributed, much of which reaches the homes of the employes. Equipment is regularly inspected and operating practices are continuously investigated to assist in the discovery of safety possibilities.

The Utah Copper Company assumes that no employe desires to be injured, that all jobs can be done safely and that safety will follow proper safety education, protected physical conditions and safe operating practices. Before entering the service of the company, applicants are required to satisfactorily pass a physical examination to determine their fitness for the job. As a new employe, he is supplied with the proper safety equipment necesary for his particular job. He is given a safety talk to point out the hazards of his prospective occupation, and given first-aid training in cooperation with the United States Bureau of Mines. He is placed in contact with safe men and safety bulletins and admitted to the club with its recreational activities. It has never been found necessary to use safety discipline on such an employe.

The employment system, Industrial Relations policy, and welfare plan of the company all contribute in promulgating the safety doctrine at the company's mine and mills. The company is a member of the National Safety Council, availing itself of the many facilities

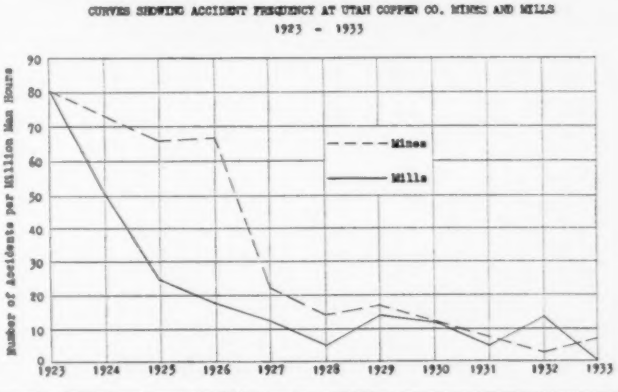
thereby afforded. It holds membership in a nationally known safety service organization supplying additional bulletins and news photographs. The bulletin program is planned to be sufficiently diversified to draw the attention of the workmen and maintain their interest and enthusiasm in the safety movement. Spasmodic safety drives are avoided while instances of accident evasion are made special advertising features. The company is an active member of the Utah-Nevada Safety Society.

A well equipped emergency hospital is maintained at each plant in charge of a company physician. Employes are required to report at the hospital immediately for treatment of even the slightest injury or illness. Prompt treatment of minor injuries halt cases of infection and expose to investigation potential accidents to be guarded against in the future. Prompt treatment of illness removes a mental exposure to injury.

Various methods are used to foster and maintain good will toward the safety movement and to provide a continuous safety incentive to employes. The following activities have effectively served this purpose: Monthly meetings of the General Safety Committee, composed of all foremen, with the Safety Director as chairman. The unity of purpose thus established creates a feeling of fellowship and cooperation within the organization which carries the burden of safety discipline and supervision. Yearly departmental safety competition serves as a safety incentive to departments. By means of a hazard factor, depending upon the nature of their work, departments are placed on an equal competitive basis with each man of the year's winning department receiving a suitable award. First-aid teams, membership on which is open to competition of all employes, have made many trips to international and other meets. These trips have been the incentive which has resulted in 10 percent of all employes receiving team training and competition. It is compulsory for all employes to take a prescribed course in first-aid, and this policy has proved its value as a base on which to build safety-conscious employes. The team-trained employe has proved his value in supervising the dressing of injuries and in the handling and transporting of patients from the site of injury to the emergency hospital. Many injuries which would have been serious or fatal in unskilled hands have been held to minor injuries by these team-trained employes who are scattered throughout the operations.

The foundation of the Utah Copper Company management-employe relationship has been built upon the company erected communities of fine homes for its employes, homes with lawns, flowers, pure water and excellent sanitation. The company has built parks, play-grounds and club buildings upon the assumption that the welfare and healthy morale of its employes would reciprocate with improved safety and more efficient operations.

Magna Plant of Utah Copper Company



The services of a nurse who contacts homes and gives needed advice in cases of sickness or distress are furnished free. Company welfare organizations are open to all employes, who if distress comes, have a legitimate place to seek relief, thereby eliminating much of the worry and many of the accident possibilities from the daily job. Good will and the spirit of cooperation is fostered as the means by which safety progress is made possible.

The soundness of the company's safety policy is reflected in the accident experience at each plant. The mines plant recently completed 37 months of operations without a fatal accident. During this period 78,000,000 tons of ore and waste were mined and transported, a feat which required the use of 9,000,000 pounds of high explosives and the expenditure of 11,000,000 man-hours of labor. A perfect safety record was the outstanding achievement of the Utah Copper Mills at Magna and Arthur in 1933. The entire calendar year was passed without a disabling accident. Immediately preceding this no-accident year, the mills had operated nine progressive periods ranging from 101 to 340 days without an injury. There has not been a fatal accident at the mills during the past seven years. Such excellent records are not the result of lucky breaks or of haphazard accident prevention drives, but are the result of constant education in safety and safe practices. They indicate that accidents are being completely eliminated for long periods where the causes are understood and intelligently combatted.

Mine Fan Economy

(*Continued from page* 29)

which is why the backward curve fan is the more efficient type.

The foregoing experience is typical of a few of the leading mines in the coal fields of the nation. To further illustrate the lack of application in keeping abreast with up-to-date fan science, the tabulations shown are given for otherwise modernized coal fields, the data in part being collected by the writer.

Experience has taught us that although a fan is new and of modern design and operates efficiently at a mine of certain size, it is very improbable that this fan will operate efficiently at another mine. Rarely do two mines have identically the same ventilating characteristics.

Main Line Haulage

By L. E. GRANT*

WITH the selling price of coal decreasing and the competitive pressure from other fuels increasing, the supervision of the actual mining operations becomes a greater responsibility and one of the major responsibilities is main line haulage. Various signal and switching devices have made their appearance on the market and the main line haulage systems in some of the larger mines are as intricate and highly developed as those of some of our railroads, the major difference being size.

But because so many of us have average size mines, it is my purpose to deal with main line haulage of the average mine for the relative efficiency of the main line is just as important to the small mine as to the large mine. Do not regard the size of the rails as being as important as the size of the ties, the drainage and alignment. For high speed traffic, of course, heavier rails offer longer life and less maintenance.

Our experience has been that with 13-ton locomotives and 3-ton cars moving at a fair rate of speed, 50-pound steel is heavy enough and can be economically maintained. Creosoted ties have demonstrated the practicability of their use. Present creosoted ties now on our main line were placed in 1928 and they are still in as good a state of preservation as the day they were placed. We have no information as to when replacements will be necessary. All heavy grades should, if possible, be eliminated but in a mine this is oftentimes not practical on account of the expense involved but the track can be well drained and this is an item that is oftentimes neglected and considerable damage is done to the locomotives and considerable efficiency is lost on account of having to run over wet rails continually. We go almost to the extremes in the pains we take in aligning and surfacing main line tracks. The track crews use portable flood lights for this purpose. Very few if any derailments occur on well aligned and well surfaced track. We go so far as to use an inspection car with two automobile head lights mounted on it and by going over the track slowly we are able to see and correct bad conditions as they develop. Frequent inspections of the main line are made and these inspections are made, not from a sense of duty but with the deliberate purpose of knowing what condition the main line is in, the thought uppermost in our minds being that wrecks and derailments result not from bad luck but from bad management and it is our personal responsibility to see that they do not occur.

The locomotive crews are held responsible for the care of their locomotives. Our maintenance procedure is simple. The motormen are required to report each week the condition of their locomotives. Printed forms are provided for this purpose. If any defect is noticed during the working day it is reported at once. On the report they are required to state the condition of each part of the locomotive. If repairs are required they must so state as the report goes to the electrician responsible for the care of the particular locomotive. He, under "column" action taken, states definitely what has been done. If repair parts are needed the electrician requisitions them in writing and states on the report that he has done so, giving the date and the number of his requisition. These reports all come to me within 24 hours after they are made. In addition we keep an accurate record of the cost of repairs to locomotives and over a period of years, or even the short period of one year, are able to determine what parts give the most trouble and the labor cost and time required to make repairs. Results from this system have been satisfactory. We are able to anticipate and correct possible breakdowns before they occur.

Serious consideration should be given to the relation the main line bears to the gathering system. A definite schedule of running time can be maintained for the main line and the size of trips can be definitely established and locomotive crews can be trained not to exceed the fixed limit. If the gathering crews know that the haulage locomotive is due on the parting at a certain time with so many empties they plan their running time accordingly and it is but a short time until a schedule becomes fixed in the minds of everyone, even to the loader at the face. If he knows his load is to be pulled between approximately 8.30 or 9.35 he is going to arrange his work so as to have the car loaded at that time. At the same time, the gathering crew knows that the main line locomotive will be at the parting between 8.55 and 9 o'clock and they arrange to get there with their loads at that time. The scheduling of the main line haulage is not difficult and can be done in the average mine. Nothing is gained by unbalanced trips. The overloading of locomotives always presents the grave danger of burning out armatures and field coils and in addition you are paying for energy that can not be utilized. It is far safer and certainly easier on everyone and everything concerned to have a locomotive pulling a trip of 20 cars making a reasonable speed on schedule time than to have a locomotive running most anytime and pulling a small trip one time and an over-loaded one another time. Everyone in the organization should know when to expect the main line locomotive at a certain point and when everyone learns to expect scheduled operation you get scheduled operation.

We work, as does nearly everyone else, under a power agreement that calls for a 15 minute power demand. To balance the power load we have installed a meter with several relays which kicks the breaker at the substation when the load has reached the designated limit and the entire haulage organization knows that only by keeping their trips balanced can they depend on an uninterrupted supply of power. Considerable savings can be made in power alone by balancing the size of the trips against the supply of

* Superintendent, Chesapeake & Ohio Ry. Co.

power available and the grades. We have found it advantageous from a safety and operating standpoint to have circuit breakers in the main line locomotives.

A dispatcher is necessary to successfully coordinate the haulage system with the other activities in the mine. He must have an agreeable personality and be more or less an executive for in the absence of other authority he must be able to think and issue direct orders. Under our system the mine foreman is responsible for everything under ground but under him is an assistant whose title is foreman in charge of transportation. The dispatcher comes directly under the transportation foreman but he has authority from the mine foreman to issue any orders in an emergency as may be necessary to clear up a given situation and he is, of course, required to notify the mine foreman at the earliest possible time after issuing such orders, just what he has done and why. Practically all the larger mines have dispatchers and many pages of interesting data could be presented on the dispatcher alone but it is my purpose here to say that a good dispatcher will pay for himself many times over during the course of each working day.

We do not employ an elaborate signal system but depend on telephones which are placed at every necessary point on the gathering system and on the main line. The dispatcher's office is placed along the main line so he is in constant personal touch with the crews. Definite rules of procedure similar to those used on our railroads should be established but no set of rules should be made so rigid as to restrict the authority and initiative of the dispatcher.

Our main line locomotives as well as our gathering locomotives move on orders. These orders are given by the dispatcher to the brakeman. We insist that the brakeman repeat the orders word for word given him by the dispatcher: for instance, if the brakeman on No. 2 is at Elk Run and wishes to come to 10 North he calls the dispatcher, who is always on the line and it is not necessary to ring him, and say: "This is Smith at Elk Run with No. 2; we would like to come West to 10 North." If the block is clear and the dispatcher wishes the locomotive to move West, he says: "No. 2 come West to 10 North," and the brakeman replies: "No. 2 come West to 10 North." If the dispatcher has heard the order repeated as he gave it, he says "O. K.," and the locomotive is allowed to proceed. This may sound like a lot of unnecessary talk but experience has taught us if we are to avoid collisions with locomotives operating on single track it is essential that each crew understand their orders.

Another thing we do which is not generally done but which we have found decidedly economical is to number our mine cars in large numbers. Defective mine cars are responsible for a good many accidents that sometimes result in serious personal injuries to the locomotive crew. By numbering the car it becomes an individual responsibility and no matter where a defect is noticed it can be reported by anyone. All a person has to do is simply go to the nearest telephone and tell the dispatcher that car No. 21 or No. 222 has a loose bumper, bad brakes, etc. The dispatcher makes out a repair slip for the car reported in need of repairs. The slip is handed to the brakeman on the main line and when the car appears on the main line it is handled and shunted onto the repair track outside, together with the repair order which is hooked on the outside of the car. This procedure eliminates any misunderstanding as to what is to be done to the car and the dispatcher knows exactly how many cars are shopped and how long they have been there. In addition a card record is kept which shows the nature and amount of repairs made to each car. We know from the records what condition each car was in on a certain date and from this information are able to check and prevent abuses to the cars.

What is more important than the maintenance of the cars is the information that can be gained from a study of the movement of cars. We found when we started this practice that some rs were dumped three or four times a day while others were dumped but once in two days.

With the varying conditions in different mines it is impossible to state here how much can be accomplished by studying car movements but by studying our car movements we have been able to reduce our tipple time one-third.

During a depression such as we are going through and one which the coal business felt the affect of long before other industries it is natural to neglect maintenance. The track on the main line is likely to suffer more than the mine cars but deferring maintenance to the main line and the mine cars is simply inviting ultimate disaster.

Badly drained, surfaced and aligned track can be run over but some day a single wreck may cost more than all the maintenance, which would have prevented such a wreck, would have cost over the period of time over which it was neglected. No great amount of equipment is necessary to keep the main line in condition, simply constant inspection and intelligent maintenance. The care the main line is given will pay as much in dividends as supervision and care will to any other part of the mine or the equipment and nothing moves unless the main line moves.

Labor Board Acts on Progressive Miners' Appeal

THE National Labor Board announced March 8 that it had acted on the request of the Progressive Miners' Union for review of the decision of the National Bituminous Coal Labor Board. Originally this union's request for a referendum had been rejected unanimously by the Divisional Coal Labor Board in Chicago, whose three members were appointed by the President, the chairman representing the public. The appeal of the union to the National Coal Labor Board, whose 18 members are appointed by the President, was again unanimously rejected, only the six public representatives voting. In view of these facts the National Labor Board did not feel justified in taking up the appeal for review or in ordering a referendum. John L. Lewis, President of the United Mine Workers of America, did not participate in the National Labor Board's decision.

The annual report of the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles, just published, shows that for the tenth consecutive year the railroads of the United States and Canada have carried dynamite and black powder without a person being killed or injured. In normal times the amount of these explosives carried reached an aggregate of more than 400,000,000 pounds.

This is regarded as the most important safety record ever made in the transportation of dynamite and blasting powder. The Bureau for the Safe Transportation of Explosives and Other Dangerous Articles was formed in 1906 under the auspices of the American Railway Association. The record has been made possible by an intensive campaign of education among railroad employes and by constant supervision and enforcement of rules by the officials of the Bureau.

LOUISVILLE, KY., is the city chosen for the twenty-fifth annual convention of the Mine Inspectors' Institute of America and the dates, May 7-9, following the Kentucky Derby, which is run on the preceding Saturday, May 5. P. J. Friel, mine inspector, 27th Anthracite District of Pennsylvania, is president of this organization of coal-mine inspectors and safety men. J. T. Ryan, of Pittsburgh, has the program well in hand, which will embody features of safety not heretofore considered. J. F. Daniel, Chief of Department of Mines, State of Kentucky, a past president of the Institute, promises that Southern hospitality will not be words without meaning.

Operating Coal Mines Without Accidents

(*Continued from page* 25)

with the attitude of the company toward safety but also with the minimum requirements of the company as to safe practices.

14. Discipline was maintained from the top of the organization down; close study of the conditions under which these very fine coal-mine accident records were attained appears to indicate that the determining factor was firm but just discipline by a supervisory force able to secure cooperation of the worker.

15. A state of "safety-mindedness" or the appreciation of the disciplinary measures invoked was developed, and in this education not only of the worker but also of the supervisory official was essential.

16. The degree of cooperation of the employes was in large measure secured by the evidence of earnestness with which the company conducted the safety program; where the major responsibility for accident prevention was accepted by the operating officials and definite efforts made to remedy substandard conditions and eliminate dangerous practices, the worker was usually inclined to try to do his share when told what to do. Some of the improvements made by companies which had these very good safety records were as follows, in general the improvements having been made before the company tried to put the safety campaign before the workers:

a. The best and safest type of equipment was purchased and put into service.

b. Moving parts of machinery where feasible were protected by guards.

c. Haulageways were cleared of debris and tracks overhauled and improved.

d. Adequate clearance was provided along haulageways.

e. Loose roof was taken down or properly timbered, in some cases with steel or steel and brick sets.

f. Improved ventilation was provided and maintained.

g. Improvements of various kinds were made in blasting practices.

h. Power wires and equipment, electrical and otherwise, were efficiently installed, guarded, and kept in good repair.

17. Ten of the 12 mines listed in table 1 as having achieved outstanding, no-lost-time accident records, had received Bureau of Mines certificates indicating that the entire personnel had been given the Bureau of Mines course in first aid; the training was done before the record was made in most instances and during the making of the record in others.

On the basis of the 1930 fatal and nonfatal injury record for the bituminous industry of the United States, the mines listed in table 1 avoided approximately 6 fatalities and 258 nonfatal injuries during the period of their operation without lost-time accidents. In considering the economic saving to the mining companies by the elimination of these fatalities and injuries, it is estimated that a direct saving of approximately $50,000, or a total saving (directly and indirectly) of about $300,000, was made; and this does not take into consideration the savings of numerous kinds—economic, humanitarian, social, and otherwise—to the workers whose lives and limbs were kept from jeopardy.

As a rule, a safe mine is an efficient mine, and safety is now fairly well associated with lower rather than higher cost of production. It is significant that approximately 58 percent of the companies shown in table 1 as having operated one year or more without a lost-time accident are subsidiary companies, which would indicate that the safety policy of the parent company, when applied intelligently to its coal mines, produces safety results comparable with those achieved by the parent company in its other industrial operations.

That accidents in coal mines can be very greatly reduced if not entirely eliminated has been conclusively demonstrated by the records of the companies described above. These records were not attained by chance; they were the results of intelligent and sincere efforts on the part of the mine managements who consider the problem of preventing accidents as an important part of coal production, and of the workers whose active cooperation was secured generally by this well-formulated, well-directed educational effort.

Equitable Mine Taxation

(*Continued from page* 11)

7. *Basis for Determining Gain or Loss:*

The bill in Section 113 would deny the March 1, 1913, value of the property as its basis in case of a loss, if such basis is more than cost. We believe the principle of March 1, 1913, value for property should be continued as much for determining loss as for determining gain, and urge that the present provisions of the law in this respect be continued.

8. *Distributions Out of March* 1, 1913, *Earnings or Profits:*

We urge that the present provisions of Section 115 should be continued for the reasons which heretofore repeatedly have been set forth by the Finance Committee.

9. *Personal Holding Companies:*

The new provisions of Section 102 are intended to meet the matter of the so-called "incorporated pocketbook." As they are now written they will, however, reach and penalize many corporations regularly and properly engaged in ordinary business which we believe it is not the intention of Congress thus to penalize. We urge that this feature receive your careful consideration in order to prevent an unnecessary and uncalled-for penalty on legitimate business enterprises.

It should be manifest at this time that it is not to the interest of business of the country or of the Government to penalize reasonable accumulation of those reserves which are necessary to carry business over recurring periods of depression. Few enterprises would have survived the past few years except for their established and consistent policy of building up a substantial surplus.

10. *Statute of Limitations:*

Section 276 (a) would remove the Statute of Limitations if there was an omission from gross income amounting to 25 percent of the gross income stated by the return, placing any instance of such difference in the stated gross income in the same classification as the failure to file return or the filing of a false or fraudulent return with intent to evade the tax. This provision regarding erroneous computation of gross income is impracticable of administration because of the uncertainties which in any event surround the determination of "gross income." Neither the Treasury regulations, the tax return forms nor the Treasury audit procedure have ever been calculated to try to determine a figure for the gross income of the taxpayer. An entirely new body of rules, regulations and decisions would have to be built up to make this provision effective.

Equitably the Statute of Limitations should not be removed or extended merely because of errors made in the preparation of returns which involve no intent to evade the tax.

11. *Gain on Dissolution:*

Section 115 (c) is amended to provide that the entire gain on dissolution should be 100 percent taxable at full normal and surtax rates, regardless of the length of time the taxpayer may have owned the stock. This would simply mean that if such a taxpayer sells his stock before dissolution, he might only have to pay on 40 percent of his gain, but if he holds his stock and himself receives the proceeds of dissolution, he would be 100 percent taxable. Such discrimination would certainly be unjust to those who continued to hold the stock until dissolution as against those who, perhaps better advised, might sell it before the dissolution took place. Every argument which justifies the reduced rate on the sale of capital assets, would seem equally to apply to the reduced returns on dissolution.

THE WALL STREET JOURNAL reports that representatives of six leading Wall Street banks recently met with important industrialists connected with the American-Russian Chamber of Commerce to discuss plans for cooperating with the Export-Import Bank of Washington to promote trade between the United States and Russia. No definite program was adopted but the matter will be considered further.

MINING EVENTS

Coal

THE coal industry has been involved in its usual group meetings, both in local districts and in Washington, in attempts to work out satisfactory conditions under the Code. The most startling and far-reaching of all the Government edicts in behalf of the coal industry was General Hugh S. Johnson's pronouncement for the seven-hour work day and the basic $5 a day wage scale. The ruling is subject to a hearing on April 9. Conferences between operators, miners, and Government officials have been going on almost steadily. Illinois, working for some time past on the eight-hour day contract with the United Mine Workers of America, found itself involved in a strike, with practically all of the mines closed. The mines reopened April 4, "in strict compliance with the new ruling." Government officials have said that the order was intended to be permanent and would continue indefinitely unless any district is able to show proof of economic inability to comply. It seems inevitable that those districts long operating under United Mine Workers' contracts, including the anthracite field, will be obliged to reopen their contracts.

All operators in the Appalachian fields except those in the northern West Virginia and smokeless fields on March 30 had signed a new wage agreement, effective April 1, with the United Mine Workers.

Recommendations for a seven-hour day, five-day week, and $5 basic wage were presented March 30 by the Appalachian Wage Scale Committee for the entire bituminous coal industry to the General Code Conference.

Settlement of the Appalachian agreement removes the possibility of a strike of 350,000 miners that had been threatened in the event of failure to reach agreement. Conferences between the various groups had been going on all through the week, and when it appeared that the operators and unions had reached an impasse, General Johnson took a hand and called in John L. Lewis on the miners' position.

Charles O'Neill, spokesman for the Appalachian group, said: "This agreement marks the end of the eight-hour day after 36 years and starts the experiment of the shorter day. . . . Operators feel that the short day will be as successful as the eight-hour." However, much remains to be arrived at before that happy time comes. Freight rate differentials; and district agreements must be adjusted, not to mention a reviewing of the old Illinois-Indiana contracts.

The developments following the Johnson order make it certain that the wage and hour question will be the subject of heavy discussion when the modification proposals to the bituminous code come up for hearings April 9. In the meantime, it may be expected that the largest operators will abide by the order until the matter is thrashed out.

An important decision just handed down by the United States Court of Customs and Patent Appeals holds that anthracite shipments to the United States from Great Britain and Germany are henceforth free of duty and that British and German importers were illegally assessed a tariff of 10 cents per 100 pounds during 1932.

This decision sustains a previous judgment of the United States Customs Court which was appealed by the Government to the Court of Customs and Patent Appeals. The appellate court upheld the contentions of importers that a clause in the Revenue Act of 1932 (which assessed the 10-cent rate on coal), stating "unless treaty provisions of the United States otherwise provide" exempted Germany and Great Britain from the duty, since favored-nation treaties with these countries exist.

The question now arises: "What effect will this decision have on our anthracite industry?" In the first place, it may be pointed out that anthracite coal has been coming in from Britain and Germany for many years free of duty, and that it was on the free list under the Tariff Act of 1932. Since the importations during those years have never constituted a danger, it might be argued that the anthracite operators have nothing to worry about.

There are other angles in this question to be considered, however. First, it may be expected that labor provisions under the code to be adopted (don't know when) by the industry will raise production costs and consequently prices. This will tend to widen the spread between foreign and domestic mining costs.

Second, any loss of our anthracite market today will be felt more keenly than would have been the case before hard coal felt the inroads of competitive fuels and the depression. The New England market has declined terrifically and with the ocean rate from British ports to Boston only $1.35 per ton as compared with a freight rate of $4.25 from the Pennsylvania mines, it appears to me that the New England market at least will be threatened.

Company Scrip

The determination of the company scrip provisions of the retail code (Article IX, Section 4), outlawing the use of non-negotiable scrip or company checks in lieu of wages, which is to be held in abeyance until a committee studies the matter, will be investigated by Prof. Charles Fowler of City College of New York; Daniel Bloomfield, Boston Retail Trade Board; and Prof. Henry Post Dutton of Northwestern University. These men have been appointed to constitute the committee appointed by the Administrator to investigate the economic and social implications of these provisions. They are authorized to make recommendations based upon their findings and such recommendations, upon approval of the President, are to become effective in place of the provisions.

Section 4 of Article IX states that "no retailer shall accept as payment for merchandise any non-negotiable scrip, company checks, or other evidence of wage payment issued by any individual or private profit organization in payment of wages or as an advance upon unearned wages. A negotiable instrument issued by any individual or private profit organization in payment of wages shall be accepted only if it is payable in cash within one month of the date of issue . . ." It is also provided that "no retailer shall extend credit in the form of goods, money or services to any person other than its own employes engaged exclusively in the retail trade, upon any employer's guarantee of part or all of said person's future wages, or pursuant to a wage deduction arrangement entered into with said employer, unless an identical guarantee or wage deduction arrangement is available to all retailers."

Originally the provisions were stayed until March 1, pending the committee investigation. Later the stay was extended until July 1. We are informed the committee will have its initial meeting "in the near future." In view of the professional activities of the two university members of the committee, it appears that an investigation can hardly be gotten under way before June and that a further extension may be made after July.

BITUMINOUS production during the week ending March 24 was estimated by the Bureau of Mines at 8,657,000 tons compared to 8,563,000 tons in the previous week and 5,106,000 tons in the corresponding week of 1933.

Anthracite production during the week amounted to 1,149,000 tons compared to 1,674,000 tons the previous week and 998,000 tons a year ago.

BITUMINOUS coal production in 1933, the Department of Mines has re-

ported, was 78,511,864 net tons, while in 1932 the production was 74,162,485 tons. Allegheny, Cambria, and Washington counties each mined more than 11,000,000 tons.

The total production of anthracite (which includes colliery fuel) for the week ending March 24, as estimated by the United States Bureau of Mines, Department of Commerce, Washington, D. C., amounted to 1,149,000 net tons. This is a decrease, as compared with production of the preceding week, of 525,000 net tons, or 31.36 percent. Production during the corresponding week of 1933 amounted to 998,000 tons.

THREE hundred and seventy-five thousand tons of anthracite have been distributed to the needy so far this winter through cooperative action of federal and state relief administrations, it was announced today by Scott G. Lamb of the Anthracite Institute, who is agent for the Federal Surplus Relief Corporation. This coal was sold at a reduction by the anthracite producing companies as their contribution to relief needs. Consequently, the actual saving through this reduction alone has meant that relief funds would go that much further.

The total tonnage of anthracite ordered shipped in replacement of relief coal delivered during February, on the Federal Relief Plan, was 203,000 tons.

THE following letter from L. A. Snead, fuel advisor to the Federal Surplus Relief Corporation, expressing appreciation of the cooperation rendered by the members of the Anthracite Institute will be of interest:

"My Dear Mr. Lamb:

"The Federal Fuel Plan is now being wound up, and the writer is leaving the service on April 1 and returning to private business. Before doing so I am writing to convey the appreciation of the Administration, as well as myself personally, to you for your generous and helpful cooperation in keeping millions of our people warm during the past winter. The accomplishment of this task was made possible by the generosity of the Government and the cooperation of all branches of the coal industry.

"In preparing the Federal Fuel Plan, I sought to establish a method of dealing with the relief situation which would, first, make coal immediately available throughout the country at all times; second, provide same at a substantial saving in cost; and third, to confine shipment and distribution to existing facilities and through normal channels, thus stimulating all branches of the industry to the extent of the tonnage involved.

"This program has been accomplished by the cooperation of the coal industry through the various code authorities, who not only made a generous contribution in price reduction, but assisted in handling the orders and bills of lading without cost to the Government. In handling relief coal, all branches of the coal industry, the producers, railroads, and dealers were brought together for the first time in a common effort for the worthy cause of relief, thus establishing a precedent of value to the Government and of importance to the industry, and if a major industry can thus demonstrate its ability to cooperate for the purpose of relief, I think it is a fair assumption that it is capable, under proper leadership, of meeting its own problems awaiting solution.

"When the history of the past winter of the depression is written it will not contain a finer record of cooperation than that furnished by the coal industry, and I am glad to share in the satisfaction which must be yours in making so valuable a contribution to the cause of relief, and on behalf of the Federal Surplus Relief Corporation I thank you sincerely for your support and assistance.

"Cordially yours,

"(Signed) L. A. SNEAD.

"*Fuel Advisor.*"

GOING INTO THE SECOND QUARTER

A GENERAL conference of manufacturers, distributors and purchasers of domestic anthracite burners was held in New York City on March 15, 1934. The meeting was called by the United States Bureau of Standards at the instigation of the Anthracite Institute Laboratory, for the purpose of adopting a commercial standard for domestic burners using Pennsylvania anthracite. By a unanimous vote, a code was accepted outlining minimum standards of construction, installation and operation. It is confidently believed that these specifications will do a great deal to protect the industry against shoddy and inefficient equipment. The approved code of the Anthracite Institute Laboratory was used as the basis for these new specifications.

Following a formal written approval, manufacturers of burners conforming to the new standard will be permitted to attach a label to their units certifying that they conformed to the Bureau of Standards specifications for domestic burners.

This action constitutes an important recognition of the utility of domestic burners and should be of value in securing the confidence of the public as well as in protecting reputable manufacturers. It should also benefit the anthracite industry by raising the standard of utilization of this class of equipment.

A RECENT report of the Bureau of Foreign and Domestic Commerce, Washington, D. C., shows that imports of anthracite for the month of February amounted to 33,168 net tons, of which Russia supplied 21,490 and Great Britain 11,678 tons.

Bituminous imports for the month of February amounted to 8,747 net tons, of which Canada furnished 8,707 and Great Britain 40 tons.

Coke imports for the month of February amounted to 14,049 net tons, of which Great Britain supplied 12,987, Germany 888, and Belgium 174 tons.

Imports of lignite amounted to 122 tons, all of which was supplied by Canada, while slack and culm imports amounted to 12,777 net tons, all of which came from Great Britain.

THE Anthracite Institute reports that measures which will attempt to settle matters that have agitated the British coal trade for some time are the purpose of a bill introduced February 15, 1934, which will amend Part I of the Coal Mines Act, 1930. The principal objects of the bill are as follows:

(a) To remove restrictions on the production of coal for export, so that no artificial barriers shall be allowed to prevent the coal trade reaping the benefit of recent commercial treaties.

(b) To prevent the diversion of export coal to inland market.

(c) To empower the Central Council to coordinate district minimum prices, in order to prevent one district from undercutting prices in another district.

Under the bill any district will have the right to bring a complaint against another district before the Central Council, and the latter will have the right, after hearing both sides, to fix minimum prices and impose penalties for non-adherence.

Copper

THE proposed copper code was opposed by a variety of interests at a resumed public hearing before Deputy Administrator King in the U. S. Chamber of Commerce Building.

Senator Henry F. Ashurst and Congresswoman Isabella Greenway of Arizona asked for a code that would really put copper miners back to work, which, they believed, no code so far proposed would do.

John L. Lewis, president, United Mine Workers of America, said the minimum wage should be at least $5 per day, and that an eight-hour day was too long. The proposed code's provision for averaging an eight-hour day over three months periods he considered such an obvious evasion of the entire purpose and spirit of the New Deal that he did not see how the NRA could consider it, or anybody think the President would sign it. Under such a system men would work any number of hours per day, and then be laid off entirely, to make the eight-hour average, he pointed out.

D. M. Kelly, attorney, representing the Anaconda Copper Mining Company, Butte, Mont., protested the code and said: "The Anaconda Copper Mining Company is willing to cooperate with the Administration and with the members of the industry to the end that the copper industry be stabilized.

"However, the Anaconda Copper Mining Company protests against a code of fair competition for the copper industry on the basis of or containing the principles of the suggested code submitted by Mr. King, the Deputy Administrator, at the close of the hearing on March 13, 1934, on the following grounds:

"1. The suggested code with said substitute provisions subjects the business of the Anaconda Copper Mining Company and its subsidiaries, the American Brass Company and Anaconda Wire & Cable Company, to a Code Authority controlled by its competitors. The interests of such competitors are directly antagonistic and adverse to the interests of the Anaconda Copper Mining Company, and neither they nor their appointees should be permitted to control its business and that of its subsidiaries.

"2. The sales plan proposed constitutes a dedication of property interest of the Anaconda Copper Mining Company to the benefit of the other members of the industry, without any provision for compensation.

"3. The suggested code with its substitute provisions is arbitrary and especially discriminatory with respect to the Anaconda Copper Mining Company and its subsidiaries.

"4. The suggested code with its substitute provisions is further discriminatory since it seeks to regulate the business of the American Brass Company and the Anaconda Wire & Cable Company, which are now subject to codes approved by the President for their respective industries, without subjecting their competitors to similar regulation.

"5. The suggested code with its substitute provisions assumes that the Anaconda Copper Mines owns the property of the Anaconda Wire & Cable Company, whereas approximately 37 percent of Anaconda Wire & Cable Company is owned by the public, and the remainder by Anaconda Copper Mining Company.

"6. The suggested code impairs the obligations of existing contracts and requires the Anaconda Copper Mining Company or its subsidiaries to apply a proportion of the benefits thereof to members of the copper industy.

SPEAKING OF SMALL GAME HUNTING AT THE CAPITOL

—The Evening Star

"7. The Anaconda Copper Mining Company submits that under normal business conditions the plants of its wholly-owned subsidiary, the American Brass Company, are able to consume in the business of fabricating copper and brass products, the entire output of the mines of the Anaconda group in the United States; that such subsidiary and fabricating business are now subject to the code approved by the President for the Copper and Brass Mill Products Industry, and that therefore neither the American Brass Company nor Anaconda Copper Mining Company should be subject to a code for the copper industry; that because of the difference in the character of the business of producers of copper in the United States, it is impossible to adopt fair rules and regulations with respect to those companies having both mine and fabricating capacity, where the fabricating capacity exceeds the mine capacity, those companies having fabricating capacity less than the mine capacity, and those companies who are without fabricating facilities. The proposed code of fair competition submitted by the United States Copper Association provides that limitation of production and allocation of sales shall be made only by voluntary agreement and for that reason was assented to by Anaconda Copper Mining Company. Said company objects to a Code for the Copper Industry, of which it is not properly a part, which imposes an allocation of sales upon the basis not of fabricating capacity, but of mine capacity, which includes in sales the sales of fabricated articles, and which allocation does not bear any relation to sales capacity, ability or organization, nor to past or future sales.

"8. The suggested code with said substitutes does not tend to increase employment, nor otherwise accomplish the purpose of the National Industrial Recovery Act.

"9. The suggested code with said substitutes is invalid among other reasons in that it requires assent to the code for the purpose of obtaining a sales quota, and prohibits sales except in accordance with the sales quota. Thus, in case of failure to assent, the code seeks to deprive a member of the right to make sales and seeks to impose penalties for violation of its provisions.

"10. The suggested code with said substitutes is not a Code of Fair Competition within the contemplation of the National Industrial Recovery Act and is contrary to the provisions thereof.

"11. The suggested code, if adopted, would be invalid and illegal."

IT IS expected that the final draft of a revision of the NRA suggested code for the copper industry will have been submitted to General Johnson before this is published. Several changes in the revised draft have been outlined by Deputy Administrator King, the most important being an arrangement for a series of production quotas by which the industry will operate at from 20 to 30 percent of capacity. A system of freezing stocks whereby newly produced copper will be supplied for fabricating plants instead of drawing on surplus is included. The code contains no minimum price provisions.

SENATOR ASHURST of Arizona has introduced a bill (S. 3182) appropriating $200,000,000 for the purchase by the Government of surplus copper to be held for use in national defense and public building projects. The Senator has also introduced an amendment imposing an import duty of 10 cents per pound on copper. The bill and the amendment read as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Reconstruction Finance Corporation is hereby authorized and directed, within the limit of any appropriation made pursuant to this Act, to purchase in the open market the surplus copper metal heretofore processed in the United States from ore mined and produced therein, and to hold such copper metal for the use of the United States in constructing military and naval equipment and public buildings as the Congress shall, from time to time, by law direct.

"SEC. 2. There is hereby authorized to be appropriated out of any money in the Treasury not otherwise appropriated, the sum of $200,000,000, or so much thereof as may be necessary, for such purchase."

Gold and Silver

DESPITE overwhelming passage by the House of the Dies bill, there is little possibility of silver legislation by Congress this session. While there has been much talk of the House breaking with the Administration on the silver question, it is important to note that President Roosevelt did succeed in holding up action on the Fiesinger bill, which is vastly more important from a monetary standpoint. The Fiesinger bill along with the Dies bill was reported favorably by the House Coinage Committee.

The Dies bill authorizes acceptance of foreign silver at a 10 to 25 percent premium in exchange for American surplus farm products. The silver to be accepted would be used as a base for additional currency. The bill is now before the Senate Agriculture Committee. Its chances of passage in the Senate are slight.

Congressman William L. Fiesinger, of Ohio, sponsor of H. R. 1577, designed to restore monetary control to the United States Government, in a recent press statement, said: "In this law we are correcting conditions which in the past have led to depressions. Under the monetary laws which have existed in the United States in the past, this power of control has been left in the hands of Europe and European governments have not used this power in the interest of stability.

"The bill formulates a monetary policy by Congress under the provisions of the Constitution that Congress shall 'coin money and regulate the value thereof.' This bill represents the supreme effort of this Committee of Congress which holds jurisdiction over the subject of regulating money values and other standards. It is the first bill this Committee has ever recommended to the American Congress which provides a way to regulate the purchasing power of gold. It takes into account the fact that the value of gold is represented by the purchasing power of gold, and not by the weight in coins. The value of gold is not determined by how many fractional parts an ounce of gold is divided into in making a franc, or a dollar, or other monetary unit.

"We speak then of the value of gold in the sense of the amount which a given weight of gold will buy. The value of gold is a matter of great importance to the people of gold standard countries. A given weight of gold being the yardstick of measure of values, its value must be held constant or else all the property in the nation which is measured by it, must contract or expand. In this sense the value of gold is little understood. Its stability is the cause of world happiness and contentment and brings wide-spread prosperity. Sorrow and depression always follow whenever its buying power increases. Boom periods, with stock exchange gambling and wild speculation always follow whenever gold buying power continues to be steadily lessened.

"By this small silver purchase we can prove that America acting alone can regulate the buying power of gold so as to control these things, and such a demonstration of our power of control is the purpose of this bill. . . .

"The silver money now in circulation in the United States including the silver certificates in common use, is an artificial form of money. It is maintained at its face value by a law which calls upon the Secretary of the Treasury to redeem the silver with gold. The silver dollar had as well be a lead dollar or a tin dollar as its value is based upon its gold redemption and not upon the value of the silver. This bill relieves the strain upon gold by giving silver a basic use as money. The value is in the silver and it carries full value, of equal value as if it were gold money. It follows, therefore, that this bill gives to the United States Government the power to control the demand upon gold and, therefore, the purchasing power of gold in compliance with the direction of mandate given to Congress under the Constitution to 'regulate the value' of coined money.

"The bill places silver in actual competition with gold as a part of the monetary system of the United States. This gives to us the control of the gold value of the world's monetary basic metals, which constitute the total current wealth of the world. This has always determined price levels and is the key to control of stable prosperity. Our Committee is convinced that this is a mathematical fact, demonstrated by past experiences, and not a theory. . . ."

Newly mined silver amounting to 832,802 fine ounces came into the Treasury during the week ended March 16, Secretary Morganthau announced. The total through the first 10 weeks of the 24 million ounce program provided for the year was only 1,544,314 ounces. The total is now 2,377,123 ounces. Gold receipts aggregated $42,720,886. Of this, $34,581,996 was imports, $5,007,473 secondary purchases, and $3,131,416 new domestic purchases.

Iron and Steel

THINGS are definitely brighter for the iron and steel industry. Nineteen thirty-three showed a substantial increase in tonnage shipped from the various ranges, and 1934 promises a much better showing. Steel companies generally have increased their wage rates, and practically all of the large organizations established a 10 percent increase on April 1. These include Bethlehem Steel, Carnegie Steel Company, Corrigan-McKinney Steel Company, American Rolling Mills and Republic Steel, Inland Steel, Jones & Laughlin, Youngstown Sheet & Tube, Sloss-Sheffield and National Steel also announce wage increases. The advance is the second within a year, and does not contemplate any shortening of the working hours per week, and is expected to substantially increase the steel industry's payroll.

END OF ROUND ONE!

—Washington Daily News

SHIPMENTS from the Lake Superior iron ore district in 1933 amounted to 21,672,410 tons, approximately six times the 1932 output, says *Skillings Review*. One hundred and twenty-two different mines were on the shipping list in 1933, with an average shipment of 177,643 tons each. Of the total shipment, 21,623,678 tons went to upper lake ports and 48,732 tons were shipped all rail to ultimate destination.

The all rail shipments were largely from the Marquette range.

The 1933 output compares closely with that of 1931 when 23,446,022 tons were shipped from 136 mines. In the record year of 1929, the output was 66,157,359 tons, sent forward from 171 mines.

Twenty-Three Active Companies

Last year there were 23 operating companies in the Lake Superior district that were on the shipping list, approximately the same as during the past four years. In 1929 there were 28 companies; among those then active which are not shipping now are the Donner Mining Co., Meriden Iron Co., Chandler Mining Co., Mineral Mining Co., Kingston Mining Co., West Chapin Mine Co., and Mesabi Iron Co. Some of these companies have passed out of the picture through the exhausting of their mines, or because other operators took over their properties, and some of these companies will be on the shipping list again in later years.

THE Federal Trade Commission has transmitted to the Senate its report on the practice of the steel industry with reference to price-fixing and the increase in the prices of steel products under the NRA code, in response to Senate Resolution No. 166, introduced by Senator Borah, of Idaho, and passed on February 2, 1934.

That there has been price-fixing, as well as increases in prices of steel products during the period covered by the inquiry, are conclusions warranted by ample facts, the report states.

The following is an authorized statement of conclusions reached in the report:

Under the provisions of the code and the methods of its application, prices for any given product at any point of delivery are uniform. This is accomplished by:

(1) The mill base prices are either identical at the time they are filed with the Code Authority or become so almost immediately. The Authority may reject any price which it determines to be un-

fair and if the member fails to file a satisfactory price, it may fix the price.

(2) No seller can make deductions from the mill base price greater than the Code Authority may approve and every seller must add to the base price the minimum of extras (for quantity, quality, shapes, sizes, processing, etc.) required by the Code Authority. Under the code provisions any extra "shall be uniform for all members of the code."

(3) Prices charged must be for the delivered product and the charge for freight must be the amount of the freight from the basing point of the district, no matter from what point the goods are shipped.

This price system:

A. Is in violation of the Pittsburgh plus order which not only prohibited the respondents therein from the use of the Pittsburgh basing point but also "from quoting for sale or selling . . . upon any other basing point than that where the products are manufactured or from which they are shipped."

B. Tends to eliminate the small enterprise not located at the basing point by requiring it to charge the same amount for freight on deliveries in its immediate vicinity as if the product had been in fact shipped from the basing point which is commonly a point at which mills of large competitors are located.

C. Results in net mill prices which are discriminatory—such price differentials not being related in any way to the cost of handling the business.

D. Discriminates against fabricators who are located at mill points which are not basing points because they can no longer obtain their supplies at the mill base price of the mill which supplies them but must pay, in addition, the equivalent of rail freight from a distant basing point, although such freight shipment was never made.

E. Has a tendency to centralize the producing and fabricating industries at the basing points in order to overcome the effect of the imaginary freight charges.

F. Minimizes the usefulness of waterway and truck transportation because of the imposition of all-rail freight, and because of the very limited allowance made where customers haul in their own trucks.

G. Results in uneconomical cross-hauling of products between basing point areas. Evidence of this was developed in the Pittsburgh plus case and in other investigations.

H. Places powerful manufacturers or groups of manufacturers in a position to compel the industry to discriminate in their favor. The Detroit automobile manufacturers have forced the Code Authority to approve an arbitrary differential in favor of southern Michigan, of $3 to $5 per ton.

I. Causes discrimination against such important steel producing centers as the Mahoning Valley in Ohio (Youngstown district).

The effects of the price system listed above are, in general, effects which result inevitably from application of provisions of the code. There is also one serious result which is due to determinations made under authority provided by the code but not, strictly speaking, under any requirement thereof. We refer to price increases which have taken place since the code has been in effect and particularly to those price increases for extras which are imposed by the Code Authority. These price increases for extras are directly traceable to action authorized under the code and discriminate particularly against purchasers of small quantities. This is illustrated by the "extras for quantity" to be added to the basing prices for tool steel. The current average price of tool steel is about $2.45 per hundred pounds. The extras to be applied to the base price on account of quantity for small quantity purchases have been increased on the order of 400 percent, and an average of such increases amounts to more per 100 pounds than the total of the base price.

In addition to the results indicated above which flow from the application of the code to manufacturers' prices, the maintenance of resale prices by jobbers, etc., is authorized by the code and required by its application. No member of the code can sell for resale to any purchaser, at any discount from his base quotation, unless such purchaser binds himself not to resell at a price below that at which the member might at that time sell to such third party.

Because of the power of the Code Authority to determine who may be classified as jobbers, the Authority is able to force out of the jobbing business concerns who have long been engaged in that business but who do not conform to an arbitrary definition of the term "jobber."

Sulphur Industry in 1933

PRODUCTION, shipments, and exports of sulphur in 1933 showed large increases in comparison with 1932. Production was 58 percent, shipments 48 percent, and exports 48 percent higher in 1933 than in 1932, but they were 29 percent, 9 percent, and 10 percent, respectively, below the averages for the 5-year period 1928-1932. Shipments exceeded production; consequently, stocks at the mines were reduced. Production of sulphur was reported from California, Louisiana, Texas, and Utah.

Sulphur output amounted to 1,406,063 long tons in 1933, a gain of 58 percent, compared with the output in 1932 of 890,440 tons. Shipments increased from 1,108,852 tons, valued at about $20,000,000 in 1932, to 1,637,368 tons, valued at about $29,500,000 in 1933, or 48 percent in both quantity and value. Stocks at the mines on December 31, 1933, had decreased to 2,799,950 tons, or 231,310 tons below the reserve at the close of the preceding year.

The new property of the Freeport Sulphur Company, in Plaquemines Parish, Louisiana, was put into operation during the year. A production of 17,705 long tons was reported by this company but no shipments were made. The Jefferson Lake Oil Company, Inc., in Iberia Parish, Louisiana, increased its production from 13,401 tons in 1932, to 303,787 tons in 1933. No shipments were made in 1932 but in 1933, 128,916 tons were shipped.

Texas produced 1,083,445 tons of sulphur in 1933, or 77 percent of the country's total. In 1932 Texas produced 98 percent of the country's total, or 876,294 tons. The properties that contributed to the production in 1933 were those of the Duval Texas Sulphur Co., at Palangana Dome, Benavides, Duval County; Freeport Sulphur Co., at Bryan and Hoskins Mounds, Freeport, Brazoria County; and the Texas Gulf Sulphur Co., at Long Point Dome, Long Point, Fort Bend County, and at Boling Dome, Newgulf, Wharton County.

The production of sulphur in California and Utah amounted to 1,126 long tons in 1933. The Bureau of Mines is not at liberty to publish these figures separately.

The average quoted price for sulphur as reported by the trade journals was unchanged at $18 a ton f. o. b. mines throughout the year. Spot prices for car lots were $21 a ton and prices for sulphur exported were given as $22-$25 a ton f. a. s. Atlantic ports.

Imports of sulphur ore amounting to 4,773 long tons were recorded by the Bureau of Foreign and Domestic Commerce in 1933. This is the first time that sulphur has been imported into the United States since 1930, at which time 29 tons of "sulphur and sulphur ore" were recorded.

Exports of sulphur or brimstone in 1933 totaled 522,515 long tons, compared with 352,610 tons in 1932, an increase of 48 percent. Exports to all the countries that receive important quantities of American sulphur, with the exception of those to Australia and New Zealand, showed increases. Australia and New Zealand received much larger quantities of sulphur from the United States in 1932 than in 1931, while the other important consuming countries showed large decreases. Canada received 122,954 tons in 1933, compared with 95,800 tons in 1932; France, 84,093 tons, compared with 60,591 tons; Germany, 69,139 tons, compared with 31,275 tons; United Kingdom, 47,149 tons, compared with 18,129 tons; Australia, 37,726 tons, compared with 60,809 tons; Netherlands, 27,449 tons, compared with 13,959 tons; New Zealand, 26,446 tons, compared with 33,654 tons. Shipments of United States sulphur to the United Kingdom in 1933 were the largest ever recorded. Exports of crushed, ground, refined, sublimed and flowers of sulphur in 1933 were 19,629,405 pounds, an increase over the 16,285,095 pounds exported in 1932. The principal importing countries were Canada with 5,161,960 pounds; Australia, 2,316,670 pounds; Germany, 2,016,392; United Kingdom, 1,452,058 pounds; Mexico, 1,153,116 pounds; and Uruguay, 1,013,600 pounds. —*By A. W. Mitchell, Division of Mineral Statistics, O. E. Kiessling, Chief Economist, Bureau of Mines.*

Lead and Zinc

THE American Zinc Institute announces that at the sixteenth annual meeting, to be held in the Hotel Statler, St. Louis, on Monday and Tuesday, April 30 and May 1, there will be a full discussion of the zinc code which has been under consideration in several recent conferences with the NRA administration.

A complete report on this subject will be made, followed by an open discussion of the code and its relation to the various branches of the zinc industry. Full reports of other institute activities, especially the better galvanizing campaign, will also be made.

The production of distilled and electrolytic zinc at zinc reduction plants in the United States in 1933 amounted to 337,269 short tons, valued at $28,331,000, increasing 52 percent in quantity and 113 percent in value from the production of 221,886 tons, valued at $13,312,000, in 1932. The output in 1933, however, was 40 percent below the average for the five-year period, 1927-1931, and the value was 56 percent below the average for that period. The production in 1933 consisted of 306,010 tons of primary metal from domestic ore, 1,172 tons of primary metal from foreign ore and 30,087 tons of secondary metal. Of the total output, 88,315 tons was electrolytic zinc.

Pennsylvania, with a production of 62,583 tons, an increase of 13 percent over output in the preceding year, made the largest contribution of any state to the total output of primary distilled zinc. Illinois was second with 60,140 tons. The remainder of the distilled output was smelted in Arkansas, Oklahoma, Texas and West Virginia.

The supply of new zinc available for consumption in the United States in 1933 amounted to 322,000 tons, an increase of 109,000 tons, 51 percent, over the available supply in 1932. Despite this increase, however, the supply of new zinc in 1933 was 32 percent below the average annual supply for 1927-1931.

SLAB ZINC PRODUCED IN THE UNITED STATES, 1930-1933

(In short tons)

	1930	1931	1932	1933
Total output:				
Primary	498,045	291,996	207,148	307,182
Redistilled secondary	* 34,849	* 21,625	14,718	30,087
	532,894	313,621	221,866	337,269
Primary zinc by origin:				
Domestic ore	489,361	291,996	207,148	306,010
Foreign ore (Mexico)	8,684	.....	.....	1,172
	498,045	291,996	207,148	307,182
Primary zinc by method of reduction:†				
Distillation:				
Arkansas	13,917	3,362	639	9,129
Illinois	94,582	65,948	67,607	60,140
Kansas	13,682	4,660	.....	.....
Oklahoma	79,742	26,924	27,226	52,000
Pennsylvania	101,916	65,445	55,536	62,583
Other States	63,040	43,759	32,932	35,015
Electrolytic:				
Idaho	9,509	8,466	5,955	7,686
Illinois	8,749	10,342	3	.....
Montana	112,908	63,090	17,250	80,629
Total	498,045	291,996	207,148	307,182
Grade A (High grade)	156,494	83,445	44,195	104,902
Grade B (Intermediate)	26,079	23,924	13,295	27,066
Grade C & D (Brass Special & Selected)	93,270	73,274	66,844	‡ 69,983
Grade E (Prime western)	257,051	132,978	97,532	‡135,318
Total	532,894	313,621	221,866	337,269
Average selling value per pound:	Cents	Cents	Cents	Cents
Grade A, Grade B	4.9	4.0	3.3	4.4
Grade C & D	4.7	3.6	3.0	4.0
Grade E	4.7	3.7	2.9	4.1
All grades	4.8	3.8	3.0	4.2
Total value of output	$51,158,000	$23,835,000	$13,312,000	$28,331,000
Zinc dust	9,237	10,611	8,046	11,157

* Includes a small quantity of secondary electrolytic.

† States in which zinc was reduced from ore, part of which originated in other states.

‡ Subject to revision. Later information may make it necessary to transfer a tonnage of zinc from brass special to prime western grade.

L. VOGELSTEIN, chairman of the board of the American Metal Company, recently delivered an address at the annual meeting of the Mining & Metallurgical Society of America, on the position of lead in the economic picture, saying, in part:

"It seems to me a very risky conclusion to judge the future lead production of the world by the production figures of the last three or four years. Firstly, never in the history of the world have prices reached as low a level as they did in 1932-1933. Secondly, there is hardly a man living who has experienced a world crisis like the present one; besides, the dimensions of business have grown tremendously since former similar upheavals. Thirdly, the rise and fall in lead production and consumption do not differ very much from the movements of other metals. * * *

"I wonder whether or not the following conclusions are justifiable:

"1.—Lead felt the effects of the economic revolution earlier than the other metals.

"2.—The increase in lead consumption during the last 50 years was relatively smaller than that of other metals.

"3.—The decrease in lead consumption during the present crisis was not as great as that of other metals.

"4.—The upswing of business in 1933 has not affected lead as much as the other metals.

"Summarizing these points, we might say that lead, being the metal which first felt the age of machinery, has a less erratic consumption curve than other metals.

"One observation has to be made, however, regarding our production figures; they disregard scrap. We have no reliable data for foreign countries and for the United States, as far as I know, we have figures only since about 1912.

"During the period of 1912 to 1920, 611,000 tons of scrap lead, etc., were added to the production in the United States.

"During the decade 1921 to 1930, 2,102,000 tons were added.

"During the last three years, 1931 to 1933, about 600,000 tons were supplied.

"The reasons for this increase are well known to all of us, but we are apt to forget that this circulating scrap is equivalent to probably more than 25 percent of the mine production of the world and, in importance, is a relatively recent addition.

"In order to supplement Mr. Finlay's interesting charts, our Statistical Department has prepared a table, which you will see on the wall, showing lead production in decades since 1861.

"These figures show the steady growth of lead production and the phenomenal development in the United States they show further that if the present rate of production continues during the whole decade, we would produce only 12,500,000 tons, or 2,000,000 tons less than during the last decade and that the United States would produce only 3,015,000 tons; in other words, our country's consumption would have to

be barely 60 percent of the last decade while the rest of the world would use as much as in the last decade. It is not reasonable to suppose that this will happen and proves how dangerous it is to draw conclusions from short periods. Experience has shown that the slack during periods of depression is generally taken up very quickly during the following years. The table shows also very vividly that our country has suffered a much greater setback during this depression than the rest of the world and that has been the fact in every crisis. Mr. Finlay's analysis of the origin of the world's lead supply and the possibilities of the future is the most valuable part of his paper. As he rightly states, our lead statistics are not reliable as to the origin of the ore supply.

"If we analyze the origin of the lead supply of the boom year 1929, we will find the following approximate percentages:

	Percent
United States	35
Canada	8
Mexico	14
South America	2
Europe	24
Asia	5
Australia	10
Africa	1

"Considering the size of the various Continents, it seems clear that we have to look to Asia, Africa and South America for new sources of supply of lead. Will they be found? Most likely; when the counturies are opened up by railroads, there is apt to be a development of mineral resources. This has been the experience during the last hundred years. It may be that a higher price for lead will be required to open up new territories. It is a miracle that so large a tonnage of lead can be produced at the prevailing price of £11 paper or £7 gold, equivalent to about 1½ old gold cents."

The Bauxite Industry in 1933

SHIPMENTS of bauxite from mines in the United States in 1933 were 154,176 long tons, valued at $923,259, an increase of 60 percent in quantity and of 68 percent in total value, as compared with 1932.

In Alabama bauxite was shipped in 1933 from the Eufaula and "Lennig" mines, in Barbour County. The shipments (all for use in the chemical industry) were 67 percent more than in 1932.

In Arkansas bauxite was shipped in 1933 from four mines—the England and Dixie No. 2, in Pulaski County, and the Bauxite and Patricia No. 1 mines, in Saline County. Shipments of bauxite from Arkansas in 1933 were 142,179 long tons, an increase of 58 percent over 1932. The main production originated in the Saline County field, where there was an increase of 47 percent. The mines in Pulaski County, however, shipped 76 percent more bauxite in 1933 than in 1932. The shipments from Arkansas were mainly for use in the chemical industry, followed in order by the aluminum and abrasive industries.

In Georgia bauxite was shipped in 1933 from the Hatton and "Easterlin" mines, in Sumter County. Shipments from Georgia in 1933 (all for use in the chemical industry) were 110 percent more than in 1932.

The producers of domestic bauxite reported sales during 1933 at prices ranging from $4 to $11.50 a long ton.

APPARENT CONSUMPTION OF PRIMARY ZINC IN THE UNITED STATES, 1930-33
(In short tons)

Supply:	1930	1931	1932	1933
Stocks at smelters January 1	85,904	167,293	143,592	128,192
Production	498,045	291,996	207,148	307,182
Imports	346	297	349	1,941
Total available	584,295	459,586	351,089	437,315
Withdrawn:				
Exports—				
Foreign, from warehouse	*	*	*	*
Foreign, under drawback	32	.....	136	697
Domestic	* 8,501	* 3,402	* 9,481	* 4,333
Stocks at smelters Dec. 31	167,293	143,592	128,192	110,487
Total withdrawn	175,826	146,994	137,809	115,517
Available for consumption	408,469	312,592	213,280	321,798

RETORT CAPACITY OF PRIMARY ZINC SMELTERS IN THE UNITED STATES, 1930-33

Total retorts at active plants	107,017	83,988	75,644	84,132
Retorts in operation at end of yr.	34,558	19,875	20,613	26,674

IMPORTS AND EXPORTS OF ZINC ORE, IN SHORT TONS, 1930-33
(General)

Zinc ore imported, zinc content	25,839	780	1,904	2,133
Zinc ore exported, gross weight	.....	13	.....	809
Zinc ore remaining in warehouse, December 31, zinc content	13,593	11,189	5,106	3,993

* Foreign included with domestic.

Bulletin of the Tri-State Zinc & Lead Ore Producers Association for March 24, gives the following production figures:

	Zinc Concentrates			Lead Concentrates		
	This Week	Last Week	Year Ago	This Week	Last Week	Year Ago
Total stock (Sold and unsold)	10,991	10,619	26,227	12,549	12,526	15,962
Net reserve stock	10,354	9,257	24,981	12,520	12,338	15,907
Production (*)	5,987	4,128	3,288	632	447	413
Shipments	5,615	6,003	3,011	609	592	868
Sales reported	4,890	5,780	4,369	450	690	913
(*)Included tailing mill production	1,397	1,398	0	...	...	...
Base price—Joplin	$30.00	$30.00	$18.00	$42.50	$42.50	$32.50
Metal Price—Average for week						
Zinc, E. St. L.—Lead, St. L.	4.365c	4.375c	3.130c	3.900c	3.900c	3.015c

* * * *

Mill Statistics:

	This Week	Last Week
Mine mills operated 32 hours or more	25	18
Mine mills operated less than 32 hours	5	4
Tailing mills operated 96 hours or more	15	15
Tailing mills operated less than 96 hours	2	0
Total mills which produced more than 25 tons during week	47	37
Mills which produced less than 25 tons during week	11	9
Total number of mills operated during week	58	46

Mine Mills Operated This Week: Amer. Diamond; Adm. No. 2 and No. 3, Barnsdall; Mary M. Beck, Beck No. 3; Mary Jane; Canadian; C. M. & R. Bird Dog, See Sah & Wilbur; Conico; VH Barr; Century Goodeagle; Dorothy Bill; Dines Wilson; EP Central; K. & O. Discard; EW No. 4; Federal Jarrett; Bluebonnet; Lucky OK; Lost Trail; Lawyers; Massell; Mid-Continent; Mission; Ramage; Rialto; Skelton; St. Louis No. 4 and No. 8; Triple P; UZ Royal; Velie Lion; White-McKay.

Tailing Mills Operated This Week: Atlas; Baxter Chat; F. & B. Bluebird; Cardin; C. M. & R. Beaver, Chubb & Webber; King Brand; Eagle Milling; John L.; E. W. No. 7; Peru-Laclede; Goings & Co.; Myers No. 2; Interstate Woodchuck; Joplin Ore Milling; Jay Hawk; Pioneer; Prairie Chicken; Semple; Mo. Chitwood; Tri-State Ottawa.

MINING STANDARDS

Since 1919 the mining industry (both coal and metal bra nches) have been working diligently in the development of a series of "Standards for Mining Methods, Practice and Equip ment." Many standards have been completed, and approved by The American Standards Association. Many additional sta ndards have completed their original program and have presented recommendations to The American Mining Congress. Many others are in the process of formation. Colonel Warren R. Roberts, Roberts & Schaeffer Company, Chicago, is chairm an of the Coal Mining Branch. Mr. Lucien Eaton, well known consulting engineer, for many years affiliated with the Clevela nd Cliffs Iron Company, heads the Metals Branch. These chairmen are now engaged in a big program for 1934, and many pr ojects are expected to be completed and initiated. The work will be conducted in cooperation with Col. Roberts and Mr. Eat on, and a large group of practical operating officials, by G. B. Southward, mining engineer, of the staff of The American M ining Congress.

The following is a brief outline of Standards already app roved, and a list of those in the process of formulation:

Safety Rules for Installing and Using Electrical Equipment in Coal Mines

Sponsors—American Mining Congress; U. S. Department of Commerce, Bureau of Mines.

THIS STANDARD, approved as American Standard on October 8, 1926, is generally recognized in American coal-mining practice. No revisions are under way at present.

Drainage of Coal Mines

Sponsor—American Mining Congress.

A REVISION of this standard covering recommended practice for the drainage of coal mines was approved on October 1, 1931, after consideration by a sectional committee actively directed by the American Mining Congress.

The text of this standard presents detailed recommendations covering the installation and operation of mine drainage equipment. Among the topics covered are the following: Pumps, piping, storage of mine waters, limitations of natural drainage, methods of unwatering abandoned workings, the effect of mine waters on drainage equipment, and recommendations regarding the use of acid-resisting metals and alloys.

Since its publication, copies of the standard have been distributed to all state regulatory bodies, to engineers of the U. S. Bureau of Mines, and various state mining bureaus, as well as to many coal-mining operators.

Frogs, Switches and Turnouts for Coal Mine Tracks

A REVISION of this standard which was originally adopted in 1927 was submitted to the American Standards Association in October, 1932, and subsequently approved. The text of this standard presents formula, tables of calculated dimensions and detailed drawings for frogs, switches and turnouts for 20 to 60-pound rail. The standard also includes sketches with complete dimensions for installing turnouts of the various numbers and track gauges recommended. This committee is now engaged in preparing recommended standards for 70 to 80-pound rail, which will be completed in the near future.

Miscellaneous Outside Coal-Handling Equipment

Sponsor—American Mining Congress.

THIS STANDARD was approved as American Tentative Standard on July 31, 1928. The text of the standard includes sections on systems of signals for hoisting, recommended safe methods for tipple practice, and fire protection of shafting and structures adjacent to mine openings. It may be separated into three documents when revision is undertaken.

Wire Rope for Mines

Sponsor—American Mining Congress.

APPROVED as American Tentative Standard on February 24, 1927, this specification for wire rope has had wide distribution. Requests for the standard have been received, not only from mining companies, for which it was developed, but also from many other industries, as the rope specified is suitable for many industrial purposes.

Construction and Maintenance of Ladders and Stairs for Mines

Sponsor—American Mining Congress.

IN THE DEVELOPMENT of this standard, which was approved as American Tentative Standard on May 9, 1928, its provisions were correlated with those contained in the Safety Code for the Construction, Care, and Use of Ladders (A14-1923). Revision of the latter standard is now before its sectional committee for consideration. Should this revision be adopted, consideration will be given to the question of revising the mine ladder code.

Rock Dusting of Coal Mines

Sponsor—American Institute of Mining and Metallurgical Engineers.

THIS IMPORTANT MEASURE for safeguarding the life of workers and minimizing property damage in coal mines was adopted as American Recommended Practice on December 30, 1925.

Rock dusting of coal mines, first proposed to the Director of the U. S. Bureau of Mines by George S. Rice in 1910, was officially approved by the Bureau in 1913, and, subsequently, adoption followed in several European countries.

Since the introduction of rock dusting in the United States, a continuous campaign to promote its more extended use has been carried on by Bureau engineers. The present code is based upon recommendations of the Bureau of Mines, which is maintaining its active sponsorship of the value of rock dusting as a safety measure.

Recognition of the importance of rock dusting as a safety measure has now become general, largely because in several instances explosions in rock-dusted mines have been localized, whereas without rock dusting they might have been major disasters.

Use of Explosives in Bituminous Coal Mines

Sponsor—Mine Inspectors' Institute of America.

THIS CODE, covering the handling of explosives in bituminous coal mines, was approved as American Recommended Practice in April, 1930. No requests for revisions have been received.

Consideration has been given to the possible development of similar safety codes for the use of explosives in anthracite and also in metal mines. Projects along these lines have not yet been initiated.

Safety Code for Coal Mine Transportation

Sponsor—American Mining Congress.

RECOMMENDATIONS for safe operating conditions in underground transportation and in surface yards, as well as upon slopes or inclines leading underground, are presented in detail in the Safety Code for Coal Mine Transportation, which was approved as American Recommended Practice on January 24, 1931. Copies of this standard have been distributed through the U. S. Bureau of Mines and state mining officials to the staffs of these organizations, and also to coal-mining companies in the United States and Canada.

Fire Fighting Equipment in Metal Mines

Sponsors—American Mining Congress; National Fire Protection Association.

THIS STANDARD was approved as American Recommended Practice on October 14, 1930. Although favorably received by the mining industry and in use by many large mining companies, its general adoption has been hindered by the almost prostrate condition of the mining industry at the present time.

Underground Transportation in Metal Mines

Sponsor—American Mining Congress.

REVISION of this standard, approved on May 26, 1928, has been under consideration by the sponsor, the American Mining Congress, for some time. Plans for expanding the project have been proposed, but little progress has been made.

Mechanical Loading Underground in Metal Mines

Sponsor—American Mining Congress.

THE PRESENT DOCUMENT, approved as American Recommended Practice on April 2, 1928, was intended to indicate the general lines that standardization might follow to be more effective for mechanical loading in metal mines. Recommendations giving general requirements for shoveling and scraping machines, and suggestions regarding their operation, were included. Consideration has been given to a revision and an extension of the present standard.

Specifications for Coal-Mine Cars

Sponsor—American Mining Congress.

THIS PROJECT, originally a part of a more general project for coal-mine transportation, was initiated in 1929. Investigation by the American Mining Congress has indicated that standardization of coal-mine cars should be confined to specifications covering details such as couplers, draw bars, wheels, bearings, bumpers, etc. Although it is realized that standardization of these important pieces of coal-mine equipment will involve a campaign of several years' duration, it is believed that possible savings to the operators and to car manufacturers warrant undertaking this program.

Mine Timbering

Sponsor—American Mining Congress.

THIS PROJECT was initiated in 1930. A draft covering preservative treatment of mine timbers was circulated in 1931. Recent advice from the sponsor indicates that the sectional committee is now being reconstituted.

Safety Rules for Installing and Using Electrical Equipment in Metal Mines

Sponsor—American Mining Congress.

THE DEVELOPMENT of the above standard was undertaken in 1930 by a sectional committee under the leadership of the American Mining Congress. Four drafts were prepared and given wide circulation in the metal-mining industry. Adoption by the sectional committee and endorsement by the sponsor came only in 1932. The standard was approved as American Recommended Practice on August 23, 1932.

The provisions of the new standard cover approved methods for installation and operation of electrical equipment in and around metal mines. The following important topics are covered: General supervisory requirements, stationary electrical equipment located underground or in buildings and enclosures on the surface, portable electrical equipment, substations and conductors for both stationary and portable equipment, and a section defining the terms used in the text of the standard.

Copies of this standard are not as yet available for distribution, but the American Mining Congress expects that the standard will soon be published.

Specifications for Trolley, Storage Battery, and Combination Type Locomotives for Coal Mines

Sponsors—American Institute of Electrical Engineers; American Mining Congress; National Electrical Manufacturers Association.

INITIATED in 1929, with the American Mining Congress and the National Electrical Manufacturers Association as sponsors, this project was altered early in 1930 by the addition of a former electrical project—Electric Mine Locomotive Control Apparatus (C49). The American Institute of Electrical Engineers joined with the two bodies mentioned above and all three are now serving as joint sponsors. Progress in the preparation of locomotive standards is being made by the Mining and Industrial Locomotive Section of N. E. M. A. About 40 items are under consideration by this group and in the main have been accepted by the several manufacturers concerned. Suggestions from the American Mining Congress with regard to motor ratings have been incorporated with the topics being considered by the N. E. M. A. committee. These preliminary investigations by committees of the sponsors will be available as a basis for the work of the sectional committee.

Outline of Projects for Standardization Under Organization by the American Mining Congress

COAL MINING

Face Preparatory.
Coal Loading.
Transportation.
Power.
Mine Timbering.
Ventilation.
Drainage.
Cost Keeping.
Safety and Personnel.
Outside Coal Handling.
General Maintenance.

METAL MINING

Breaking Ore and Rock.
Mechanical Loading.
Transportation.
Hoisting.
Power.
Mine Timbering.
Ventilation.
Drainage.
Safety and Personnel.
General Maintenance.
Shafts.
Mine Accounting.
Sampling and Prospecting.
Milling and Smelting.

IN THE series of legislative proposals which will be pressed at the present session of Congress by the American Federation of Labor are amendments to "vitalize" Section 7-A, the collective bargaining provision of the Recovery Act and the inauguration of a shorter work-day and work-week. The legislative program deals with:

1—Amendments to the National Recovery Act to make "real and vital" the purpose of its labor sections.

2—The restoration of the wages and salaries of government employes.

3—Legislation providing for a shorter work-day and shorter work-week, without reductions in pay, for both private and public employees as a remedy for unemployment.

4—The strengthening of immigration statutes and adequate enforcement of immigration laws.

5—Federal legislation to assure "decent salaries" for public school teachers.

6—Cooperation with States for legislation providing for old-age pensions, unemployment insurance, abolition of child labor and minimum wages for women and minors.

7—Licensing of corporations to assure wage earners the right to organize and to guarantee "decent" wage standards, hours of labor and working conditions.

PERSONALS

AMONG THE Illinois coal operators to attend the recent code meeting in Washington were GEO. B. HARRINGTON, president of the Chicago, Wilmington & Franklin Coal Company; D. W. BUCHANAN, president of the Old Ben Coal Corporation; G. W. REED, vice president of the Peabody Coal Company; PAUL WEIR, vice president of the Bell & Zoller Coal & Mining Company; W. J. JENKINS, president of the Consolidated Coal Company of St. Louis; C. J. SANDOE, vice president of the West Virginia Coal Company of Missouri; F. H. WOODS, president of the Sahara Coal Company; and F. S. PFAHLER, president of the Superior Coal Company.

A SPECIAL conference was called by HOWARD I. YOUNG, president of the American Mining Congress and president of the American Zinc, Lead, and Smelting Company, on March 28, at the offices of the American Mining Congress. The following representatives of the mining industry were present at this meeting: HOWARD I. YOUNG; ANDREW FLETCHER, vice president and treasurer of the St. Joseph Lead Company; CHAS. E. DUNLAP, president of the Berwind-White Coal Mining Company; HENRY O'BLENESS, of the Berwind-White Coal Mining Company; RICHARD C. KLUGESCHEID, secretary of the Kennecott Copper Corporation; DR. E. W. PARKER, secretary of the Anthracite Institute; W. J. JENKINS, president of the Consolidated Coal Company of St. Louis; DR. R. C. ALLEN, vice president of Oglebay, Norton and Company and president of the Lake Superior Iron Ore Association; RALPH M. ROOSEVELT, vice president of the Eagle-Picher Lead Company; PAUL WEIR, vice president of the Bell & Zoller Coal & Mining Company; J. B. PUTNAM, of Pickands, Mather and Company; and A. G. MACKENZIE, secretary, Utah Chapter, the American Mining Congress.

J. W. ALLEN, secretary and treasurer of the Inspiration Consolidated Copper Company, attended a special tax conference of leaders in the mining industry at the Mining Congress offices during the month.

VICTOR RAKOWSKY has been in Florida for several weeks, stopping in Washington and Baltimore en route to his home in Joplin, Mo. With him were Mrs. Rakowsky and Dr. and Mrs. Mayo.

JULIAN BOYD, consulting engineer of Los Angeles, Calif., was reelected president of the Mining Association of the Southwest at its February meeting. Other officers elected were C. B. TIBBETTS, vice president; WALTER ABEL, secretary; VICTOR J. HAYES, assistant secretary; G. A. BISBEE, THOS. E. CAMPBELL, E. H. HILL, M. J. HOLMES, E. HUGUENIN and W. B. TUCKER, directors.

JOS. L. OSLER, general manager of the Blackwood Coal and Coke Co., Blackwood, Va., has been spending many days in Washington. He is on the wage scale committee for his district.

AMONG THE copper producers recently in Washington in regard to code matters were LOUIS S. CATES, president of the Phelps Dodge Corporation; E. T. STANNARD, president of the Kennecott Copper Corporation; ERLE V. DAVELER, treasurer of the Utah Copper Company; CLEVELAND E. DODGE, vice president of the Phelps Dodge Corporation; C. F. KELLEY, president of the Anaconda Copper Mining Company; and JAMES MACNAUGHTON, president of the Calumet and Hecla Consolidated Copper Company.

MATT BAUMGARTNER, prominent in the development of the Cœur d'Alene mines, died during the month of February after a short illness. Mr. Baumgartner was active in many mining properties in the Northwest.

CARROLL B. HUNTRESS, executive secretary of the National Coal Association, will present a paper on competitive fuels at the Cincinnati meeting of the American Mining Congress.

J. O. ELTON, manager of the International Smelting Company, Salt Lake City, has returned to his offices after an extended trip to Mexico and Arizona.

H. G. WASHBURN, general manager of the Federal Mining and Smelting Company, Wallace, Idaho, was a New York visitor during March.

WILLIAM N. SMITH, general manager of the Vinegar Hill Zinc Company, is operating the Trewartha and Crawford mines, the only active properties in the Platteville, Wis., zinc district.

DR. GEO. OTIS SMITH and his daughter sailed from New York on March 9 for California via the Panama Canal. They will spend several months on the coast.

D. D. MUIR, JR., vice president and general manager of western operations, U. S. Smelting, Refining, and Mining Company, has been elected president of the Utah State Board of Trade, which is a new organization designed to build up the industry and commerce of the State and to act as a clearing house in the solution of problems connected with code administration.

E. T. STANNARD, president of the Kennecott Copper Corporation, has been made president of the United States Copper Association, which has been formed to administer the copper code if and when finally accepted.

The following election of members to the Illinois Subdivisional Code Authority was made at a recent meeting: Central District—G. W. Reed, A. B. Steffens, C. J. Sandoe, Don Cowin, and A. L. Wilcoxson; Belleville District—Hubert Howard and Frank Davis; Southern Illinois—Wm. J. Jenkins, F. H. Woods, D. W. Buchanan, and Geo. B. Harrington; Northern Illinois—T. C. Mullins, off rail member, Frank Aid.

DR. FRANCIS A. THOMPSON, head of the Montana School of Mines and the Montana Bureau of Mines and Geology, has returned to Butte after a recent visit to Washington.

LEROY SALSICH, president of the Oliver Iron Mining Company, has returned to his offices in Duluth, Minn., after a business trip to New York.

EARL E. HUNNER and RAY W. HIGGINS, Duluth, Minn., are visiting the properties of the Consolidated Coppermines at Kimberly, Nev. Mr. Hunner will also visit the Pacific Coast before his return to Duluth.

TASKER L. ODDIE, former U. S. Senator from Nevada, has become president of the Gold Mining Association of America, succeeding GEO. W. STARR, who has resigned because of stress of private business.

THE NATIONAL CHAIRMAN and district chairmen of the Program Committee for the Cincinnati Convention—C. M. LINGLE, vice president of the Buckeye Coal Company; C. W. GIBBS, general manager of the Harwick Coal & Coke Company; CHAS. F. HAMILTON, vice president of the Binkley Coal Company; CHAS. W. CONNOR, superintendent of mines, Nellis Coal Corporation; D. A. REED, manager of operations of the Consolidation Coal Company; I. N. BAYLESS, assistant general manager of the Union Pacific Coal Company; and C. A. GIBBONS, general manager of the Susquehanna Collieries Company—will hold the final meeting of the committee in Washington on April 10.

National Labor Board Reports To the President

SENATOR ROBERT F. WAGNER today submitted to the President a statistical report summarizing the work of the National Labor Board system from its inception to February 1. The report reads:

To the President:

"I have the honor to submit a statistical summary of the work of the National Labor Board and of 17 of its 18 Regional Labor Boards.

"Disputes involving 914,000 workers have been before the Boards, or a total of 1,818 cases, to February 1, of which 69 percent were settled. Altogether about 650,000 workers have been put back to work or kept at work, or had their less acute disputes adjusted.

"Included in this total are 599 strikes, of which we have settled 80 percent, besides averting 197 more strikes—a total of 482,500 returned to work or kept at work in strike situations.

"Cases pending are 322, or 18 percent, involving 164,000. About 100,000 workers (or a flat average of 5,500 to a board) come under cases, largely of strikes which dragged on, where no definite solution could be enforced, or of disputes where some adjustment resulted whose terms were not reported to the boards.

"There is a marginal area of settlements through the influence of the mere existence of the boards. Disputants have settled up because it was realized there was a tribunal to which the matter would ultimately have to go.

"One-half 9(636) of the settlements have been by agreement, and most agreements promise durable peace.

"The boards have supervised 97 industrial elections and have had 70 cases jointly submitted for arbitration. The recent increase in arbitration cases bespeaks confidence in the boards.

"Altogether the record is a testimonial to the public spirit of the boards' 250 members — all of them busy people, prominent in the affairs of their communities, whose services on the boards are voluntary.

"Considered against the background of the disturbed economic conditions when the National Labor Board (August 5) and the Regional Labor Boards (October) began their work, and with the question in mind as to what might have happened had the country lacked this system of mediation and arbitration, the work has won the praise of many commentators. What this record actually reflects is the cooperative attitude and desire for industrial peace of the great majority of employers and employes, who have followed the board's methods in the adjustment of complicated and contentious affairs. This support of the majority is very reassuring and indicates that the general principles of the boards are soundly based.

"The record has a disquieting aspect. Its percentage of settlements is too low, and some settlements have been unsatisfactory. The statistics bear out what the boards in many regions have been reporting for some time; namely, that the willingness to use the boards, displayed by the majority, is encountering the impediment of a small minority whose desire for industrial peace is not uppermost.

"This impediment is increasing. Certain industrialists' efforts to challenge the board's authority is symptomatic. Far more significant is the fact that three-quarters of all the disputes involve complaints of denial of the rights of self-organization and collective bargaining contained in Section 7-a of the Recovery Act.

"Clearer understanding and recognition of these rights and of the National Labor Board's authority seem to be the requirements of the present situation as indicated by our six months' experience."

THE Tariff Commission has prepared a tabular statement summarizing the powers which have been granted in foreign countries for the regulation of tariffs by administrative action. This summary is based on a revision of a pamphlet published by the commission in 1932, entitled "Regulation of Tariffs in Foreign Countries by Administrative Action." The pamphlet has just been brought up to date at the request of the Committee on Ways and Means of the House of Representatives and printed by that committee last week. The subject covered is of particular interest in connection with the pending tariff legislation—H. R. 8687, which, if finally passed, will permit the President to enter into reciprocal agreements with foreign countries.

OFFICIALS OF THE NEW EXPORT-IMPORT BANK FOR INTERNATIONAL TRADE

Seated, left to right: Charles E. Stuart, Vice President; Mr. R. Walton Moore, Assistant Secretary of State; George N. Peek, President of the Board; and Tom K. Smith, Special Assistant to the Secretary of the Treasury.

Standing, left to right: Lynn P. Talley, Treasurer, and Assistant to the Directors of the Reconstruction Finance Corporation; Robert F. Kelley, Russian Expert of the State Department; Stanley Reed, General Counsel for the Reconstruction Finance Corporation; Harold Neff, Federal Trade Commissioner; and Chester Davis, Agricultural Adjustment Administrator.

WORLD METAL PRODUCTION
(Metric Tons)

	Copper	Zinc	Lead	Steel
1881	163,400	260,977	389,200	5,376,839
1882	178,000	277,282	408,700	6,184,920
1883	196,000	285,036	451,000	6,046,122
1884	217,000	299,420	438,300	5,988,620
1885	229,213	300,200	452,200	6,276,076
1886	220,570	298,604	443,500	7,791,645
1887	227,390	307,020	482,300	9,809,263
1888	262,167	323,397	524,500	10,241,088
1889	265,397	335,450	549,200	10,874,652
1890	280,863	348,585	539,500	12,448,234
1891	289,282	362,204	598,800	12,092,948
1892	306,602	372,900	629,200	12,883,263
1893	304,461	378,093	627,600	12,093,963
1894	327,698	380,877	621,800	12,798,635
1895	350,356	416,621	636,600	16,659,005
1896	391,677	424,141	677,100	17,581,131
1897	416,482	443,302	702,000	20,979,179
1898	424,974	469,031	797,700	23,732,720
1899	478,200	490,205	783,600	27,543,318
1900	499,200	478,500	871,300	28,727,239
1901	534,800	507,400	887,700	31,449,869
1902	553,300	545,300	891,100	34,972,497
1903	591,300	571,600	895,400	36,298,414
1904	647,900	625,400	970,400	36,148,079
1905	693,900	658,700	968,500	43,900,648
1906	720,600	702,000	984,000	49,635,998
1907	712,000	738,400	1,015,400	51,273,340
1908	763,800	722,100	1,054,800	44,359,522
1909	852,400	783,200	1,087,300	53,499,974
1910	891,000	816,600	1,127,000	58,656,312
1911	893,800	902,100	1,136,000	60,387,354
1912	997,800	977,900	1,181,800	72,668,758
1913	973,365	1,014,370	1,186,700	76,157,262
1914	918,268	878,523	1,155,349	61,163,709
1915	1,076,187	839,312	1,107,451	66,613,226
1916	1,391,365	989,044	1,138,459	83,026,332
1917	1,433,333	1,003,417	1,170,856	84,894,119
1918	1,423,413	829,624	1,195,533	77,381,810
1919	970,894	661,285	885,851	58,028,000
1920	982,351	736,235	912,934	72,265,000
1921	548,054	450,002	883,696	45,337,984
1922	903,703	724,953	1,069,715	66,832,000
1923	1,280,494	961,468	1,192,052	78,199,000
1924	1,381,115	1,020,766	1,331,101	76,492,000
1925	1,442,189	1,148,254	1,514,889	90,176,000
1926	1,485,527	1,245,775	1,605,994	92,386,000
1927	1,526,236	1,328,218	1,685,575	100,361,000
1928	1,716,738	1,421,505	1,670,162	111,546,000
1929	1,930,370	1,470,472	1,753,179	120,099,000
1930	1,572,818	1,413,091	1,676,567	94,925,000
1931	1,344,440	1,009,868	1,392,965	69,119,000
1932	882,453	793,921	1,166,408	50,829,000
1933*	1,080,000	996,000	1,206,177	67,000,000

* Estimated.

HAVE YOU HEARD—?

TWO INDUSTRIES—first the Refractories Industry and second the Schenley Products Company—have voluntarily followed the Administration's request and reduced hours 10 percent and raised wages a like amount.

SECRETARY PERKINS announced an increase in employment of about 345,000 and $12,000,000 in payrolls between January 15 and February 15.

THE World Trade League of the United States at a recent meeting unanimously endorsed the reciprocal tariff program of President Roosevelt.

AT THE annual meeting of the American Metal Company, L. Vogelstein, chairman of the board, said: "Without desiring to enter into a discussion as to the ultimate effect of the various measures inaugurated since the beginning of March, 1933, it can be stated without fear of contradiction that in our country a decided and rapid improvement—of course, with interruptions—has characterized the last 12 months.

"As far as non-ferrous metals are concerned, we are still in the period of stagnation which followed the rapid upswing in the second quarter of last year. However, the remarkable improvement in the steel industry justifies the confident belief that the non-ferrous metals will follow shortly in the wake of steel and recover a great deal of the ground lost during the last year."

THAT THE United States would not "rush blindly" into trade agreements was one of the assurances given by Secretary of State Hull in his testimony before the House Ways and Means Committee on the Administration's reciprocal tariff bill. He stated that Congress would be given ample time to review these agreements. "It seems manifest that unless the Executive is given authority to deal with the existing great emergency somewhat on a parity with that exercised by the executive departments of so many other governments for the purpose of negotiating and carrying into effect trade agreements, it will not be practicable or possible for the United States to pursue with any degree of success the proposed policy of restoring our lost international trade. It seems to me that this is the one governing consideration before us."

THE COAL MINES of the United States came close to operating a calendar year without going over 1,000 fatalities, according to the National Safety Council. The tentative figures now available indicate that 1,013 persons were killed in the coal mines of this country in 1933, bituminous mine operations causing 782 fatal accidents and anthracite 231. The fatality rate (tentative) per 1,000,000 tons produced was 2.68, but it is probable that this rate will ultimately be about 2.83 and total fatalities about 1,075 to 1,078 as sundry customary readjustments of tentative figures usually bring the final figures to a somewhat higher basis. Both the number killed and the fatality rate per million tons of coal produced are new "lows" for the coal mining industry of the United States and fortunately both bituminous and anthracite participate in this.

ACCORDING to official sources, only by striving for the lowest schedule of prices on which higher wages and increasing employment can be maintained can America's power to purchase be increased and sustained.

LEGISLATIVE observers seriously doubt the passage of the Wagner bill creating a National Labor Board with broad powers and clarifying Section 7 (a) of the NRA. Because of its highly controversial nature regarding labor questions this bill is due for rough going during the coming months.

THE INDUSTRIAL credit bank system plan of the Administration is being actively opposed in the House banking committee. However, it is understood that the Administration plans to use pressure to get this bill through Congress.

SECRETARY ICKES announced that PWA expenditures would amount to $1,382,000,000 during the year, exclusive of statutory and executive allotments. Fifty-five small non-Federal allotments, totalling $3,408,300, were approved by Mr. Ickes as Public Works Administrator.

REPRESENTATIVES of 61 iron and steel mills in six Eastern States signed a petition to members of Congress against the Wagner and Connery Labor bills.

CLAIMING THAT THEY need from $16 to $18 a unit of 60 percent concentrates to make a profit, producers of tungsten ore in Colorado urge that the present tariff schedule of $7.93 fixed under the Hawley-Smoot measure be raised to assure them of such a price. It is said that unless additional protection is given the domestic industry in the near future mines in this country will be forced to close.

SILVER TENDERED for delivery against March contracts on Commodity Exchange Wednesday totaled 22,225,000 ounces, the largest aggregate for any day in the history of trading in this country; stocks of silver in the depositories licensed by the Exchange reached a record high of 111,418,262 ounces.

SENATOR THOMAS of Oklahoma is drawing up a bill calling for purchase by the government of all available silver in the United States at current government quotation of $1.29 an ounce for newly mined metal and its coinage into regulation dollars for circulation "to improve the agricultural situation."

LONDON SILVER agreement between Great Britain and China has been ratified by legislative Yuan; the agreement has provisions protecting China in case foreign silver prices rise to a level adverse to China's economic interests.

IN THE HEARINGS on the suggested copper code, Senator Ashurst and Representative Greenway of Arizona criticized the NRA suggested code on the grounds that it would not promote reemployment of idle copper miners.

IT IS REPORTED that the smokeless coal operators of West Virginia have agreed as a group with the United Mine Workers of America on a new contract for one year from April 1, the day on which the present contract expires. The new contract is said to call for payment of 46 cents an hour instead of the 42 cents paid at present. The smokeless operators are also understood to have agreed to the "check-off" system for the deduction of union dues by the operator, to be turned over to the union. It is said that the question of a 7-hour day instead of an 8-hour day, as at present, is still subject to negotiation.

IN A REPORT to the Senate on the Borah resolution to investigate price-fixing in the steel industry under the NRA, the Federal Trade Commission made the following conclusions: (1) Price-fixing exists, (2) price-system violates Pittsburgh plus order, (3) code tends to eliminate small enterprise not located at basing point by requiring it to charge same amount for freight on deliveries in immediate vicinity as if product has been shipped at basing point at which mills of large competitors are located, (4) code has tendency to centralize producing and fabricating industries at basing points in order to overcome effect of imaginary freight charges, (5) code minimizes effect of waterway and truck transportation because of elimination of all-rail freight and because of very limited allowance made where customers haul in own trucks, (6) code places powerful manufacturers or groups of manufacturers in position to compel industry to discriminate in their favor, (7) code authorizes maintenance of resale prices by jobbers and gives Code Authority power to force out of jobbing business firms not complying to arbitrary definition of term "jobber."

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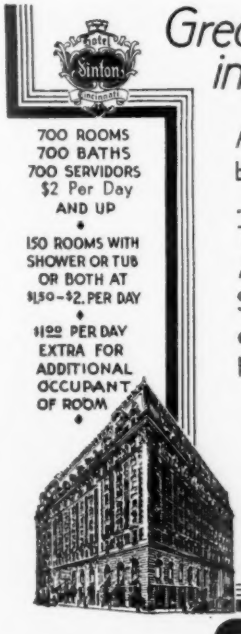

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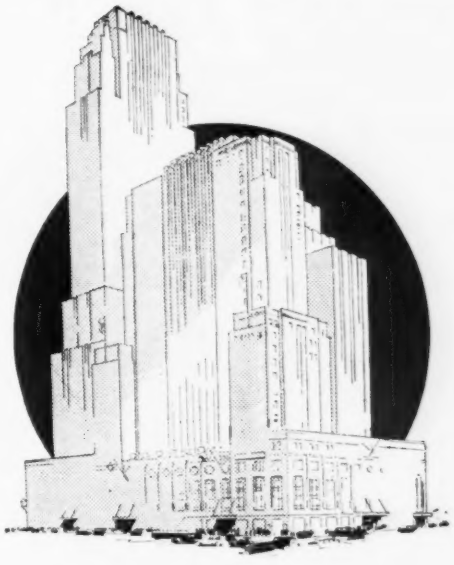

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NEWS OF MANUFACTURERS

ALLIS-CHALMERS MFG. CO. has published a new bulletin No. 1165 illustrating and describing its line of Bracket Bearing Synchronous Motors. In addition to the standard line of motors for general requirements, including exciters, control equipment, etc., the bulletin also treats motors with special features of construction, such as anti-friction bearings, enclosed collector rings, splash-proof type, enclosed fan-cooled type, and vertical motors.

The bulletin also contains a discussion of use of the synchronous motor for improvement of power factor with examples applying the graphical method for figuring power factor corrections.

THE USE OF single and double-drum electric "Tugger" hoists is covered with great thoroughness by a new 38-page catalog (No. 1860-B) recently issued by Ingersoll-Rand Company, 11 Broadway, New York.

"Tugger" hoists are very widely used in connection with scrapers for slushing and loading ore and coal in mines and quarries, for pulling cars, etc. They are also in operation in numbers of gravel pits and cement mines and in ships for scraping bulk cargoes toward the unloaders.

The bulletin mentioned above will undoubtedly furnish many valuable suggestions to the mine operator, the construction man, the roadbuilder, or the maintenance engineer. A copy of this catalog will be furnished on request.

ALLIS-CHALMERS MANUFACTURING COMPANY announces a new bulletin, No. 1473, Machinery for Complete Crushing Plants, also No. 1813-E on Ball Granulators.

H. D. JAMES, control expert and long a consulting engineer of the Westinghouse Electric and Manufacturing Company, has opened an engineering consulting service specializing in industrial and building problems.

MR. WILBUR G. HUDSON has been appointed chief engineer of Link-Belt Company's Pershing Road plant in Chicago.

ROBINS CONVEYING BELT COMPANY, of New York City, has acquired the coal and ore handling business of the Mead-Morrison Manufacturing Company, of Boston, to be operated henceforth as the Mead-Morrison Division of Robins Conveying Belt Co.

These companies are both well known in their respective fields. Just as the Robins Company was the pioneer in the development of the belt conveyor, the Mead-Morrison concern was the first to make general use of grab buckets for unloading coal and ore from vessels. Their hoisting towers which operate these grab buckets are to be seen in all the world's ports.

The present consolidation gives to the Robins Company a truly complete line of material handling machinery, including Mead-Morrison unloading towers, stocking and reclaiming bridges, pivoted bucket carriers, cableways, and car and barge hauling equipment, in addition to the Robins belt conveyors, crushers, screens, skip hoists and other units.

Many members of the Mead-Morrison staff have been taken into the Robins organization. Included in this number are Messrs. Brooks and Youngberg of Chicago, and Donahue, Snow and Brown of Boston.

The Mead-Morrison office at 220 East 42nd Street, New York, has been closed. Its personnel has moved to the offices at 15 Park Row, New York City, where the Robins Company has made its home for 35 years.

At the Robins works in Passaic, New Jersey, a force of men is now installing equipment which is being transferred from the Mead-Morrison plant at East Boston, Mass.

A BULLETIN listing the complete line of all sizes and types of "Jackbits" has recently been issued by Ingersoll-Rand Company, 11 Broadway, New York.

The bulletin is profusely illustrated, and describes the "Jackbit" and "Jackbit" Rod, showing a number of unretouched photographs of "Jackbits," both with center and side holes, and in the 4-point and 6-point style.

It is now possible to use "Jackbits" and rods on many jobs where it was previously uneconomical.

AFTER FIELD TESTS and development work covering many months, Link-Belt Company announces the addition of a domestic unit to its line of underfeed screw type stokers. With this new unit, this company rounds out its stoker line to a total of ten sizes, to cover the entire range of boiler capacities from the home size up to 250 B.H.P.

Some other features of note are: Accessible cleanout door, smoke arrester, conveniently located retort cleanout, fan silencer, easily replaceable shear pin.

The new unit is built complete at the Caldwell-Moore Plant of Link-Belt Company, 2410 W. 18th Street, Chicago, Ill.

THE CAMERON MOTORPUMP is now built in 26 sizes ranging in horsepower from ¼ to 30, and in capacities from 5 gpm. to 1,000 gpm. Certain sizes are two-stage units and some other sizes are fitted with a self-priming attachment, which makes them suitable for use as sump or gathering pumps in mines.

The entire line, together with tables of capacities and performance data, is fully illustrated in new Catalog No. 7464, a copy of which can be obtained from Ingersoll-Rand Company, 11 Broadway, New York, or any I-R branch office.

The Motorpump is noteworthy in that it is a complete pumping unit, with built-in electric motor and pump rotor on the same shaft. Because of its perfect balance, almost no foundation is required. It can be operated equally well in any position.

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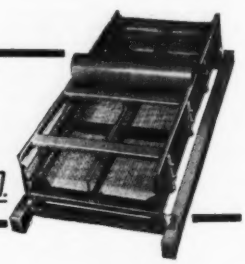

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A good serviceable steam hoist, capable of 35,000-40,000 lbs. rope pull at 1300 FPM, for operation on single track mine slope, with drum to hold 10,000 ft. 1½" rope, 150 lb. steam pressure. Give full specifications, age, make, shop no., condition and price, f.o.b. cars shipping point. Address M.C.J., 439 Munsey Bldg., Washington, D. C.

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READINESS always pays—especially in the emergency.
Careful, periodic inspection and timely maintenance of motors and generating equipment are the first precautionary steps. The next step is the installation of NATIONAL PYRAMID BRUSHES.

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The Bichel Gauge is a remarkable laboratory apparatus that records the amount of pressure generated at every instant during the split-second duration of an explosion. Its chart may be likened to a slow-motion picture . . . in effect, slowing up an explosion so its characteristics can be observed.

Study of these data aids us:

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Hercules owns one of the few Bichel Gauges in this country. By means of this and other exacting tests we obtain the reliability so characteristic of Hercules explosives.

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TWO PUBLICATIONS entitled Baldwin Westinghouse Mining Locomotives and Baldwin Westinghouse Permissible Storage Battery Locomotives have been issued by the Westinghouse Electric and Manufacturing Company. Explosion tested trolley and permissible battery locomotives are described thoroughly in these publications. Copies may be obtained from the nearest district office or direct from the advertising department, East Pittsburgh, Pa.

A NEW ILLUSTRATED leaflet describing type CR single phase repulsion-start induction motors has been issued by the Westinghouse Electric and Manufacturing Company. These motors are available for 110-220 volt 25-50-60 cycle service in sizes from ¾ to 3 hp. They are especially designed for heavy industrial service. Copies of the leaflet may be obtained from the advertising department, East Pittsburgh, Pa.

ANNOUNCEMENT of an improved model chain hoist is made by the Wright Manufacturing Division of the American Chain Company, Inc., York, Pa. Improvements have been made in the previous model to increase the durability, efficiency and usefulness. One innovation is zinc coating of all exposed parts, making the hoist practical for outdoor use and for service in moist and other corrosive atmospheres. The addition of precision ball bearings with integral grease seals supporting all moving parts, increases the efficiency by 10 percent over former models. Wear is reduced to a minimum on all vital moving parts by a system of continuous lubrication of the positively sealed precision bearings. Additional minor improvements include hardened pawl tip, improved load chain guard and ball spring covers on oil tubes. No change is made in price over former models and this hoist is considered to be the greatest value in its field.

ALLIS-CHALMERS MANUFACTURING COMPANY announces the removal of its Buffalo district office on February 24, 1934, to Liberty Bank Building.

THE Administration is already underway with its plans for the summer which include stimulus of public works activities, import and export trade development, industrial planning under revised codes, general loosening of credit for industry, and a concentrated movement to meet the unemployment situation.

E. W. Thornley, chief purchasing agent of the American Smelting & Refining Company, New York City, has been elected a vice president of the company.

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MAY 7 to 11, 1934

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and am lawfully entitled to purchase.....round-trip excursion ticket.... to **CINCINNATI, O.,** for myself and the following dependent members of my family:

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(Purchaser sign in presence of Agent.)

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C. P. A. Exc.

S. L. Coombes
Convention Manager.

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3. It is **not valid unless signed** in ink in the presence of ticket agent, in space provided above, by the purchaser whose name appears hereon.
4. Ticket Agent must satisfy himself that the person who presents certificate is entitled to reduced fare under tariff conditions.
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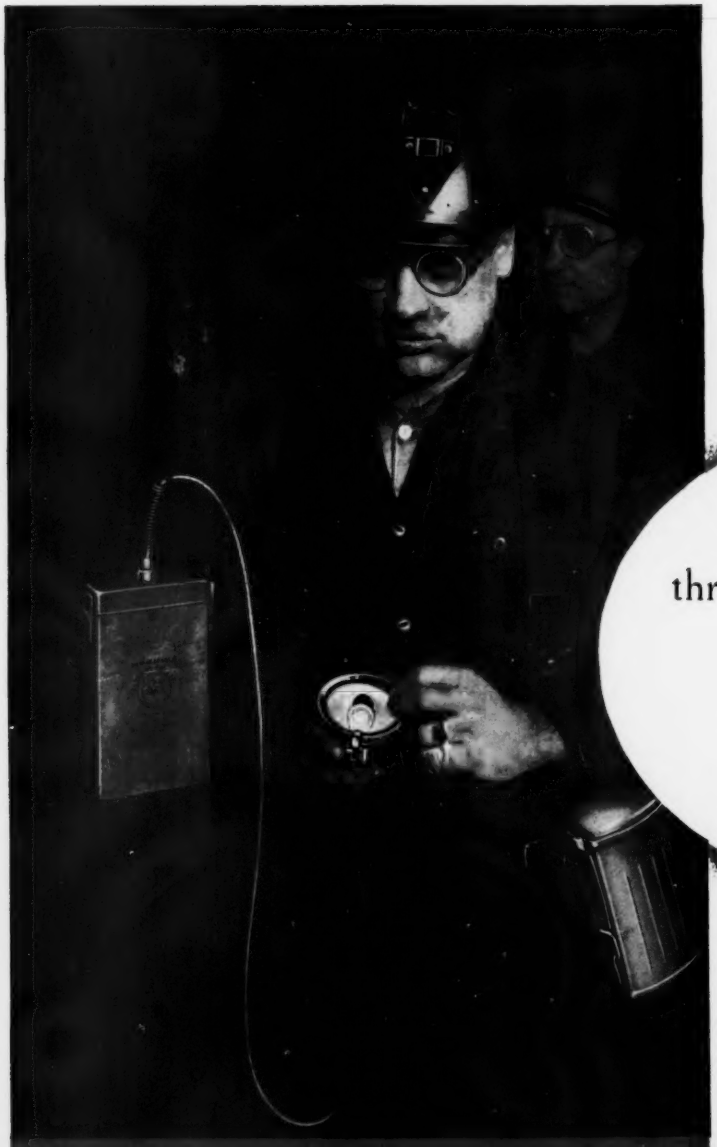

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